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GENERAL RADIOACTIVE MATERIAL (G-RAM) RADIOLOGICAL FINAL REPORT FOR
DECOMMISSIONING CHARLESTON NAVAL SHIPYARD VOLUME II SECTION 1 THRU
SECTION 9 CNC CHARLESTON SC
4/1/1996
RADIOLOGICAL ENGINEERING DIVISION

GENERAL RADIOACTIVE MATERIAL (G-RAM)
RADIOLOGICAL FINAL REPORT
FOR THE DECOMMISSIONING OF
CHARLESTON NAVAL SHIPYARD

(VOLUME II)

SECTION 1

THRU

SECTION 9

Prepared by
Radiological Engineering Division
Charleston Naval Shipyard
Charleston, South Carolina

April 1, 1996

GENERAL RADIOACTIVE MATERIAL (G-RAM)

**RADIOLOGICAL FINAL REPORT
FOR THE DECOMMISSIONING OF
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(VOLUME II)

**SECTION 1
THRU
SECTION 9**

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TABLE OF CONTENTS

SECTION	TITLE
1	Building 2/2A Class A Areas Shipfitter's Lay-down area Rod Issue Station Class B Areas Spray Welding Room A Spray Welding Room B
2	Building 3 Class A Areas Industrial Test Laboratory Instrument Receipt and Inspection Area
3	Building 10 Class A Area RADIAC Source Storage Area
4	Building 11 Class A Area Hot House
5.a	Building 13, First Floor Class B Areas Radiographic Rooms 1 thru 5 Radioactive Source Storage Vault Radiography Equipment and Instrument Storage Room Class C Area Contaminated Waste Storage Room
5.b	Building13, Second Floor Class A Areas Room 205 X-ray Room (Former) X-ray Room (Present)
5.c	Building 13, Third Floor Class B Areas Room 301 Rooms 301A thru 301E Room 302 Room 303 Room 303A Room 303B Room 304 East Side 3rd Floor Hall

TABLE OF CONTENTS

SECTION TITLE

Building 13, Third Floor (continued)

Ladies Room

Mens Room

Class C Areas

Room 305

West Side 3rd Floor Hall

Room 306

Rooms 306A thru 306C

Room 307

6**Building 32**

Class A Areas

Six Ash Hoppers

7**Building 35**

Class A Areas

Machine Shop Area

Evaluation Room

Etching Room

Sample Prep Room

Machine Shop Area

Welding Shop #1

Welding Shop #2

Class B Areas

Storage Areas Alpha and Bravo

Welding Areas #1, #2, and #3

Welding Booths\ Research and Development Area

Hot House

Welding Rod StorageArea

Issue and Prep Cage

Welding Rod Grinding Area

8**Building 44**

Class A Area

Former Key Room

9**Building 57**

Class A Area

Former RADIAC Storage Cage

10**Building 58**

Class B Areas

Room 101

Room 102A

Room 109

TABLE OF CONTENTS

SECTION TITLE

	Building 58 (continued)
	Room 205
	Room 207
	Room 208
	Room 238
	Room 241
11	Building 59
	Class B Area
	East End
12	Building 62
	Class B Area
	Shop Number 2
13	Building 79
	Class B Area
	South East Corner
	Class C Area
	Office Space (spill site)
14	Building 177
	Class A Areas
	RADIAC Equipment Receiving Area
	Shop 51 Instrument Rooms (former and present)
	Antenna Shop
	Source Storage Room
	Class B Areas
	Optical Polishing Shop
	Source Storage Room
	Optical Shop
	Remaining Areas of 2nd Floor
	Class C Areas
	Paint Shop
	Radium Room
	Cleaning Room
	RADIAC Calibration Laboratory
15	Building 187
	Class B Area
	Navigational Submarine Systems Testing Area
16	Building 190
	Class A Areas
	Room 102

TABLE OF CONTENTS

SECTION	TITLE
	Building 190 (continued) Room 105/106
17	Building 217 Building 217 Class B Areas All
18	Building 218 Class A Areas Tools and Parts Storage Area Tool Issue Area
19	Building 247 Class B Area Welding Shop Rod Room rod storage issue Room preparation room
20	Building 1173 Class A Area Warehouse
21	Building 1174 Class A Area Welding Area Welding Trailer Class B Area Grinding Area
22	Building 1175 Class A Area Wire Cage
23	Building 1267 Class B Areas Building Original Site Present Location
24	Facility 26-13 Class B Areas Rod Storage Area Grinding Area Office

TABLE OF CONTENTS

SECTION	TITLE
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25	Building 4000 Class B Area Shop Area Class C Area Storage Areas
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26	Building J-22 Class B Area Room A Room B Room C
----	--

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

a. Introduction:

Building 2 was built in 1906 as a Shipfitter Shop and served as a support facility for Dry Dock 1. It is located at Fifth Street and Avenue B inside the Controlled Industrial Area. Building 2A, located along Roe Avenue between First and Second Streets was constructed in 1937. Building 2A extends to the east of the original Building 2.

(1) Description:

Building 2\2A consists of two contiguous buildings. Building 2A extends east, parallel to the east wing of Building 2. Building 2A occupies 140,257 square feet. The walls are constructed of poured reinforced concrete resting on a reinforced concrete pier foundation.

(2) Brief History:

(a) **Use:** Building 2\2A retains its original use as a Shipfitter Shop. Located in Building 2A is the Shipfitter Laydown Area and the present Welding Rod Issue Station. Originally, the Welding Rod Issue Station in Building 2A consisted of two areas established to support waterfront welding operations: a preparation area where rods were prepared for waterfront use and a storage and issue area. These two areas were later combined into its present location. A recent renovation was added to Building 2A which was Spray Welding Rooms A and B.

(b) **Radiological History:** Building 2\2A has very little radiological significance with respect to G-RAM. No radiological work operations were performed in Building 2\2A. A radium deck marker was found approximately mid-shop at the ship fitter's lay-down area in 1960 and disposed of properly. Radiological history indicates that no known spills of radioactivity occurred and no loose surface contamination, above the limit, has been detected.

(3) Survey Requirements:

- (a) Class A release survey.
- (b) Class B release survey.

b. Discussion:

For the Class A survey, the floor of the Shipfitter Laydown Area and the Welding Rod Issue Station was divided into a total of 24 grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific, therefore, entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid except for the Shipfitter Laydown Area, which had a steel plate floor. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 2A Shipfitter Laydown Area were determined from similar materials in Building 1720. Background levels used in Building 2A Welding Rod Issue Station were determined from similar materials in Building 1655.

For the Class B survey, the floor of Spray Welding Rooms A and B was divided into a total of 12 grids with a maximum size of 10' by 10'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

The walls were horizontally divided into 20 grids with a maximum size of 6' high and 10' wide. Each of these wall grids was subdivided into sub-grids with an approximate size of 3' high by 5' wide. An archway into the Spray Welding Booth in Spray Welding Room B prevented complete data acquisition in Wall eight, grid A-1.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface. The IM-247/PD survey is grid specific, not sub-grid specific. The data shown on the localized grid map in each sub-grid indicates the highest potential for the entire grid. Solid samples for greater than or equal to twice background surveys are taken only in the sub-grid(s) that contain the

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

twice background area(s).

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of two solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 2A Spray Welding Rooms A and B were determined from similar materials in Building 233.

c. Summary:

Surveys performed in the Class A areas with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.56 pCi/100 cm² to a high of 2.02 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.31 pCi/g to a high of less than 0.68 pCi/g and Th-232 solid material samples ranged from a low of less than 0.90 pCi/g to a high of less than 1.40 pCi/g.

Mathematical computation of the specific radioactivity of the solid material

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 2.70 pCi/100 cm² to a high of less than 6.60 pCi/100 cm² and the Th-232 levels ranged from a low of less than 10.00 pCi/100 cm² to a high of less than 13.00 pCi/100 cm².

Surveys performed in the Class B areas with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) detected one area greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.65 pCi/100 cm² to a high of 1.32 pCi/100 cm².

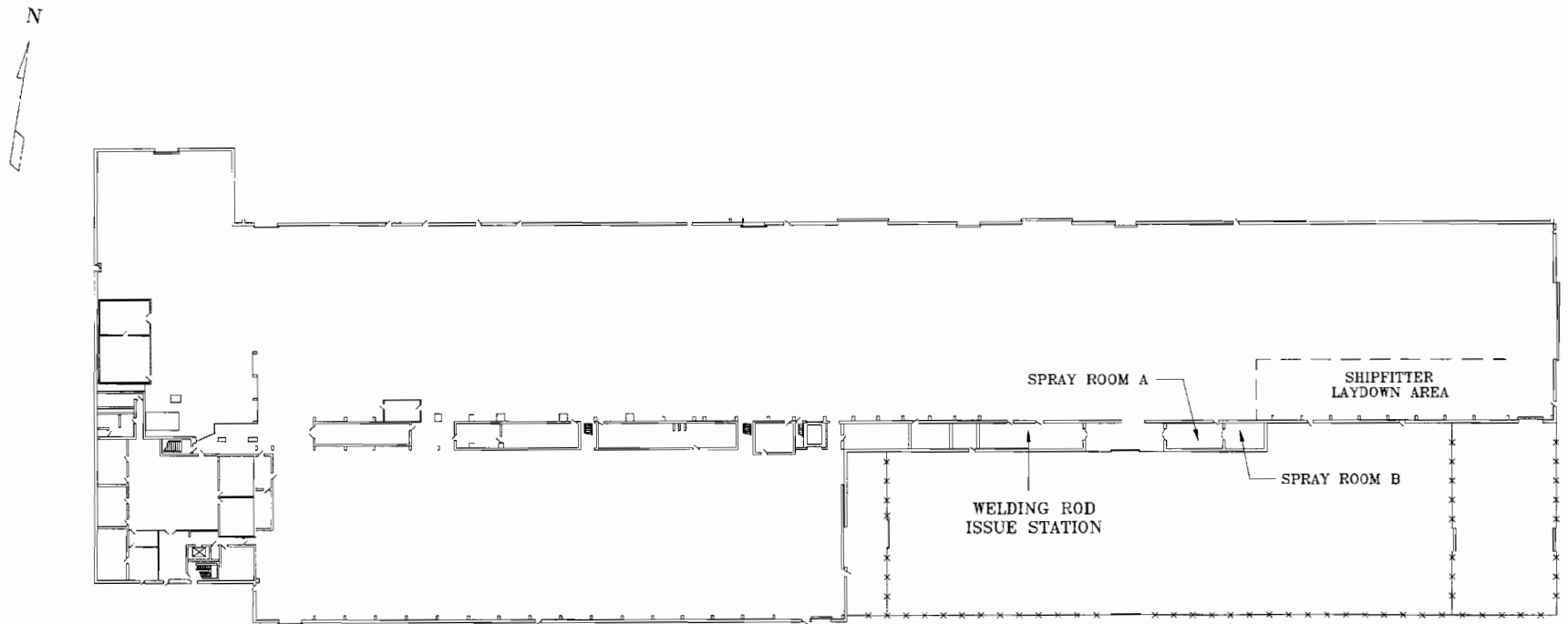
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.27 pCi/g to a high of 1.10 pCi/g and Th-232 solid material samples ranged from a low of less than 0.36 pCi/g to a high of less than 2.10 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 3.50 pCi/100 cm² to a high of 27.90 pCi/100 cm² and the Th-232 levels ranged from a low of less than 7.00 pCi/100 cm² to a high of less than 32.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

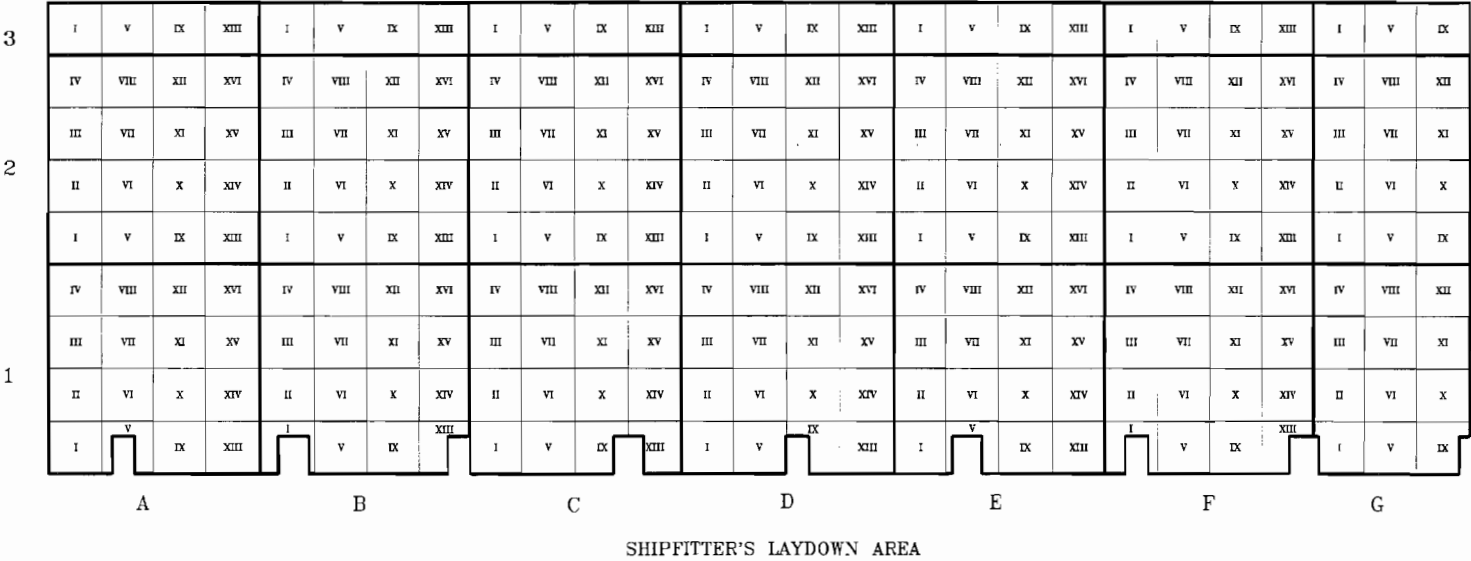
d. Site Map



CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

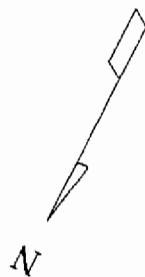
e. Overall Grid Map



CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

e. Overall Grid Map



1

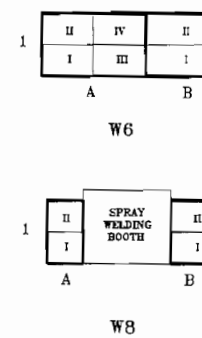
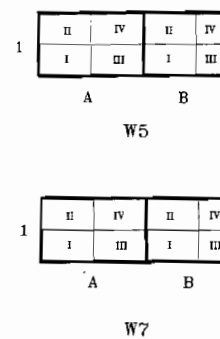
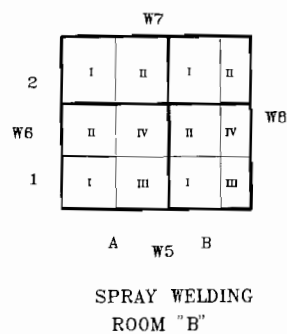
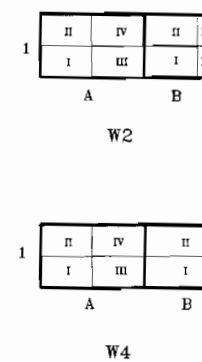
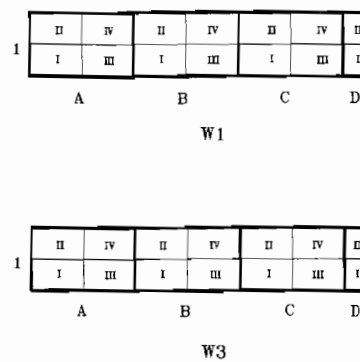
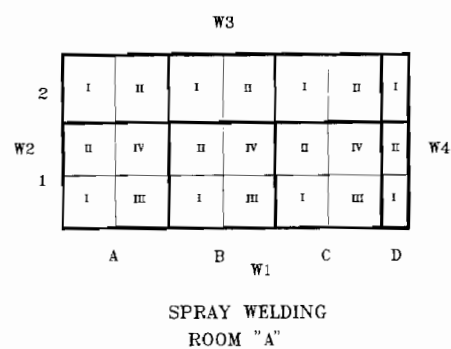
III	VII	XI	XV	III	VII	XI	XV	III	VII	XI
II	VI	X	XIV	II	VI	X	XIV	II	VI	X
I	V	IX	XIII	I	V	IX	XIII	I	V	IX
A				B				C		

WELDING ROD ISSUE STATION

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

e. Overall Grid Map



e. Localized Grid Map

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm2], Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm2], Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm2], Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm2], Regulator value: <450

e. Localized Grid Map

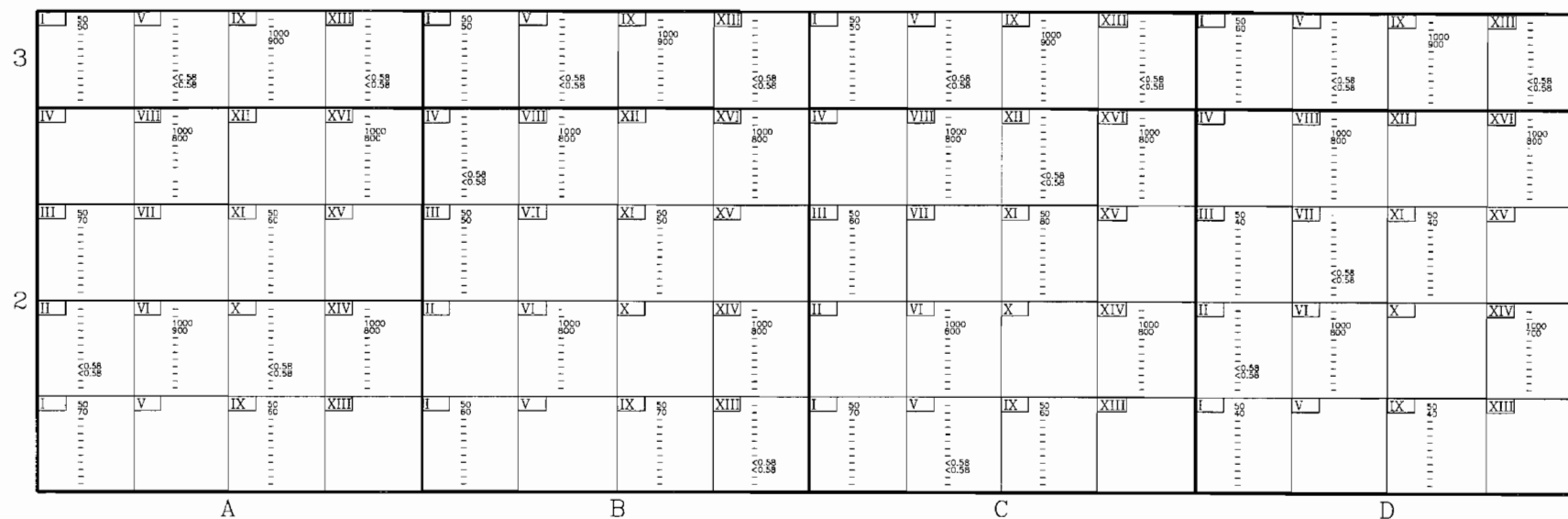


7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regular value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regular value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]: Regular value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regular value: <30
11 - Ra-226 Surface Radioactivity [pCi/100cm²]: Regular value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regular value: <450

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

e. Localized Grid Map



SHIPFITTER LAYDOWN AREA FLOOR

Note:
Entries 5 and 6 are not required for Class "A" Localized
Grid Maps. See the Discussion paragraph.

Data Legend:
1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-253/PD HV-1 PHA [bkg.]
4 - IM-253/PD HV-1 PHA [cpm]
5 - IM-253/PD HV-2 GROSS [bkg.]
6 - IM-253/PD HV-2 GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.2 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

e. Localized Grid Map

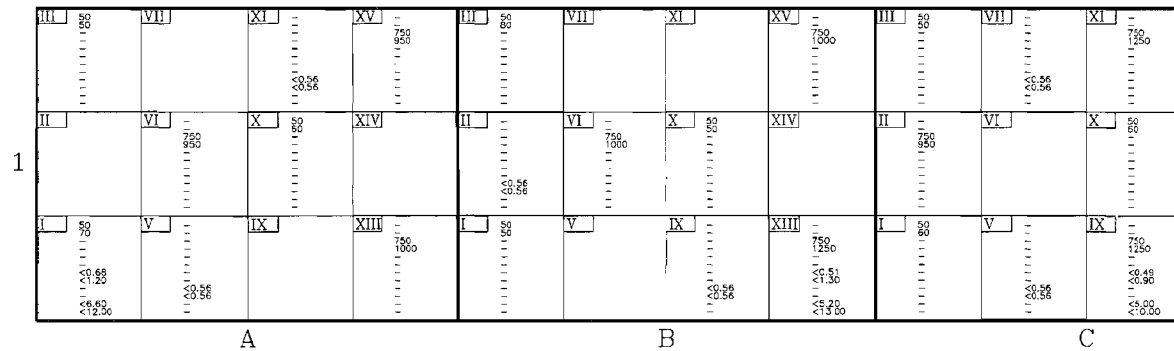


7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <90
11 - Po-210 Surface Radioactivity [pCi/100cm²], Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

e. Localized Grid Map



WELDING ROD ISSUE STATION FLOOR

Note:
Entries 5 and 6 are not required for Class "A" Localized
Grid Maps. See the Discussion paragraph.

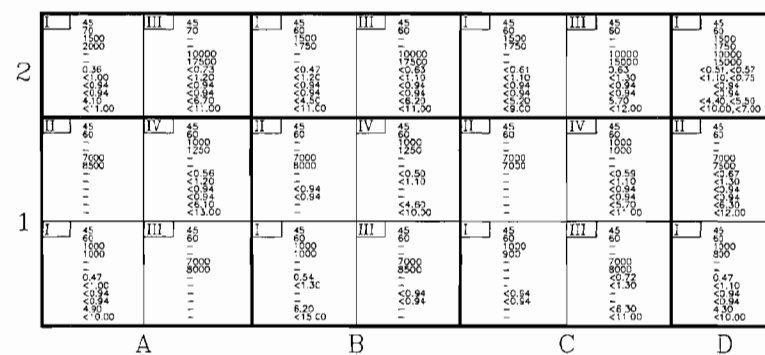
Data Legend:

1 - IM-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Tl-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <8 above bkg. of 3.2 pCi/g
3 - IM-253/PD (HV-1 PHA) [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]. Regulator value: <9
4 - IM-253/PD (HV-1 PHA) [cpm]	10 - Tl-232 Removable Radioactivity [pCi/100cm ²]. Regulator value: <90
5 - IM-253/PD (HV-2 GROSS) [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]. Regulator value: <45
6 - IM-253/PD (HV-2 GROSS) [cpm]	12 - Tl-232 Surface Radioactivity [pCi/100cm ²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

e. Localized Grid Map

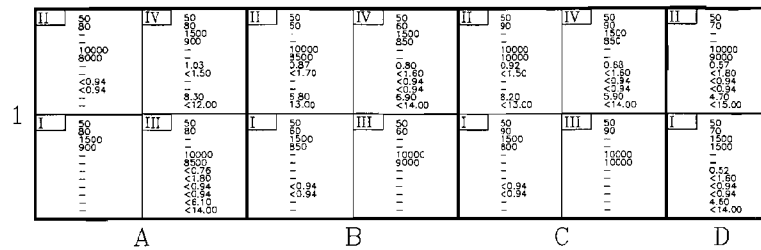


SPRAY WELDING ROOM A FLOOR

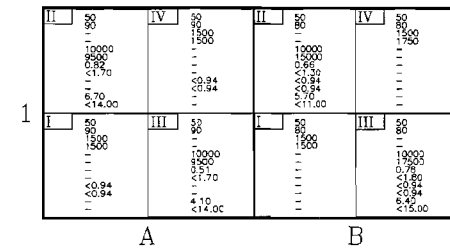
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4 - IM-253/PD (HV - PHA) [cpm]
5 - IM-253/PD (HV - GROSS) [bkg]
6 - IM-253/PD (HV - GROSS) [cpm]

7 - Re-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Re-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <30
11 - Re-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

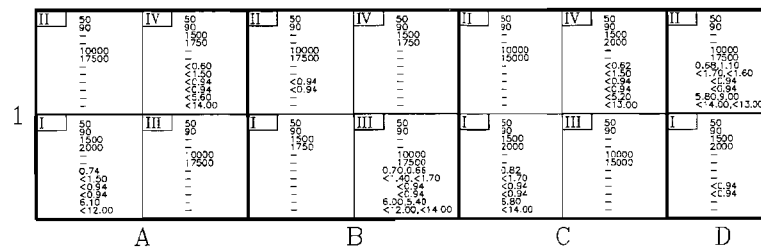
e. Localized Grid Map



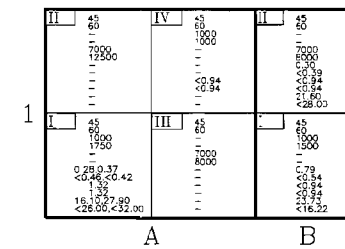
W1



W2



W3



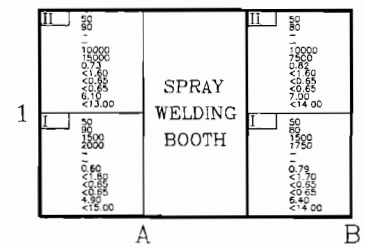
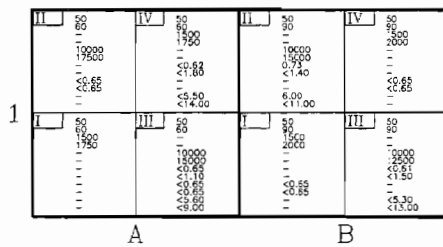
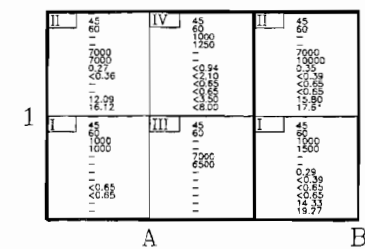
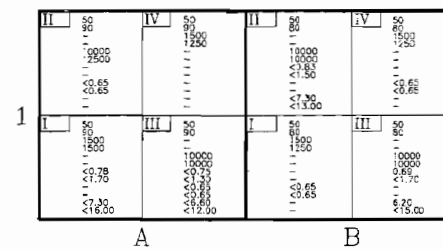
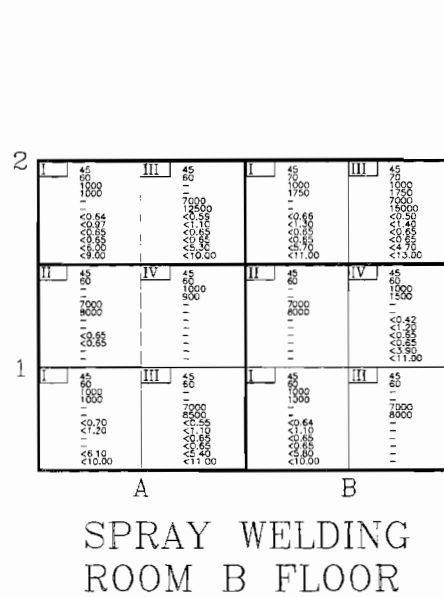
W4

Data Legend:			
1	M-247/PD [pkc]	7	Re-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
2	M-247/PD [cpm]	8	Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
3	M-253/PD [v=1 PhA] [bkg.]	9	Re-226 Removable Radioactivity [pCi/100cm ²]: Regulator value: <9
4	M-253/PD [v=2 PhA] [bkg.]	10	Th-232 Removable Radioactivity [pCi/100cm ²]: Regulator value: <30
5	M-253/PD [v=2 GROSS] [pkc]	11	Re-226 Surface Radioactivity [pCi/100cm ²]: Regulator value: <5
6	M-253/PD [v=2 GROSS] [cpm]	12	Th-232 Surface Radioactivity [pCi/100cm ²]: Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

e. Localized Grid Map



Data Legend:
 1 - IM-247/PD [bkg]
 2 - IM-247/PD [cpm]
 3 - IM-253/PD [bkg] PHA1 [bkg]
 4 - IM-253/PD [bkg] PHA2 [cpm]
 5 - IM-253/PD [bkg] PHA3 [cpm]
 6 - IM-253/PD [bkg] PHA4 [cpm]
 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regular value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regular value: <5 above bkg. of 3.2 pCi/g
 9 - Rn-220 Removable Radioactivity [pCi/100cm²]; Regular value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regular value: <9
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regular value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regular value: <45

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

f. Photographs

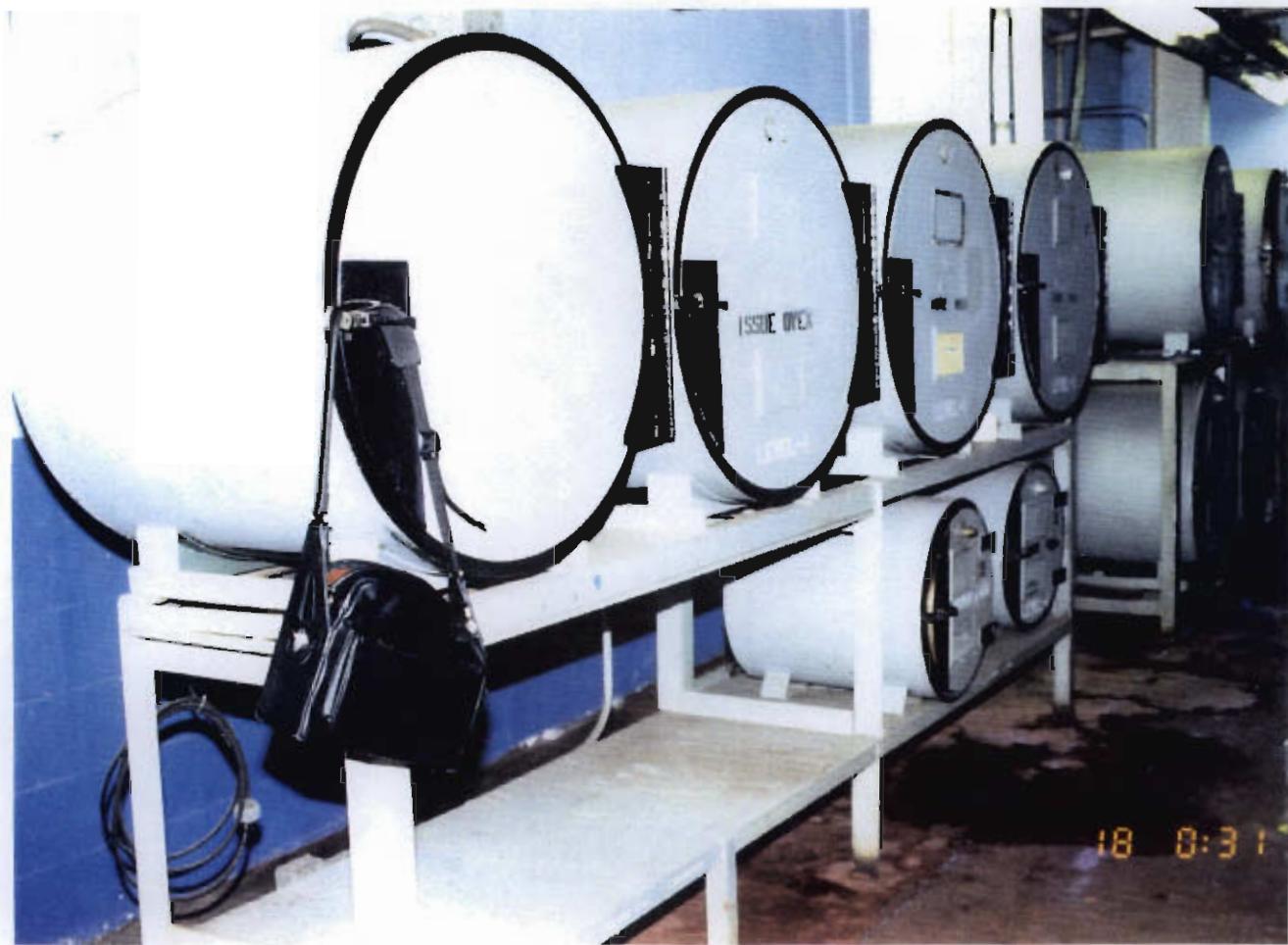


Shipfitter's Laydown Area

CNSY G-RAM FINAL REPORT

Section 1. Building 2/2A

f. Photographs



Welding Rod Storage & Issue Station

CNSY G-RAM FINAL REPORT

Section 2. Building 3

a. Introduction:

Building 3 was constructed in 1905 as an Inside Machine Shop. It is located south of Building 2, on Hobson Avenue, between Second and Third Streets.

(1) Description:

The building occupies 151,824 square feet on two levels. Two areas were surveyed in Building 3 for G-RAM. The Gauge and Instrument Receipt and Inspection Area (GIRI) was approximately 110' by 24' and located along the south wall of Building 3. The Industrial Test Laboratory (ITEL) was approximately 24' by 80' and located in the northeast corner of Building 3.

(2) Brief History:

- (a) Use:** The Gauge and Instrument Receipt and Inspection Area was established to receive and inspect various gauges and instruments, some of which contained Ra-226. The Industrial Test Laboratory was used to store radium pellets used for radiography. These sources were encapsulated and stored in a shielded container.
- (b) Radiological History:** Radiological history indicates that no known spills of radioactivity occurred and no loose surface contamination above the limit was detected.

(3) Survey Requirements:

- (a)** Class A release survey.

b. Discussion:

The floors of Building 3 Gauge and Instrument Receipt and Inspection Area and the Industrial Test Laboratory were divided into 10 grids approximately 20' by 20'. Each of these grids was sub-divided into 5' by 5' sub-grids.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least four pre-determined 5' by 5' sub-grids in each grid to represent 25% of the total grid surface.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least four other predetermined sub-grids in each grid to represent 25% of the total grid surface.

CNSY G-RAM FINAL REPORT

Section 2. Building 3

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in the Building 3 surveys were determined from similar materials in offices located in the southeast end of the building.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed in the GIRI with the IM-253/PD (HV-1 PHA) did not detect any areas greater than or equal to twice background.

Surveys performed in the ITTEL with the IM-253/PD (HV-1 PHA) detected four areas greater than or equal to twice background. Solid samples were obtained in each of these areas.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than 9 pCi/100 cm² and removable Th-232 levels were less than 90 pCi/100 cm². The removable Ra-226 levels ranged from a low of less than 0.55 pCi/100 cm² to a high of 1.23 pCi/100 cm² and removable Th-232 levels ranged from a low of less than 0.55 pCi/100 cm² to a high of 1.23 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 solid material samples were less than 5 pCi/g and all Th-232 solid material samples were less than 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of less than 0.47 pCi/g to a high of 1.60 pCi/g and Th-232 solid material samples ranged from a low of less than 0.90 pCi/g to a high of less than 1.60 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than 450

CNSY G-RAM FINAL REPORT

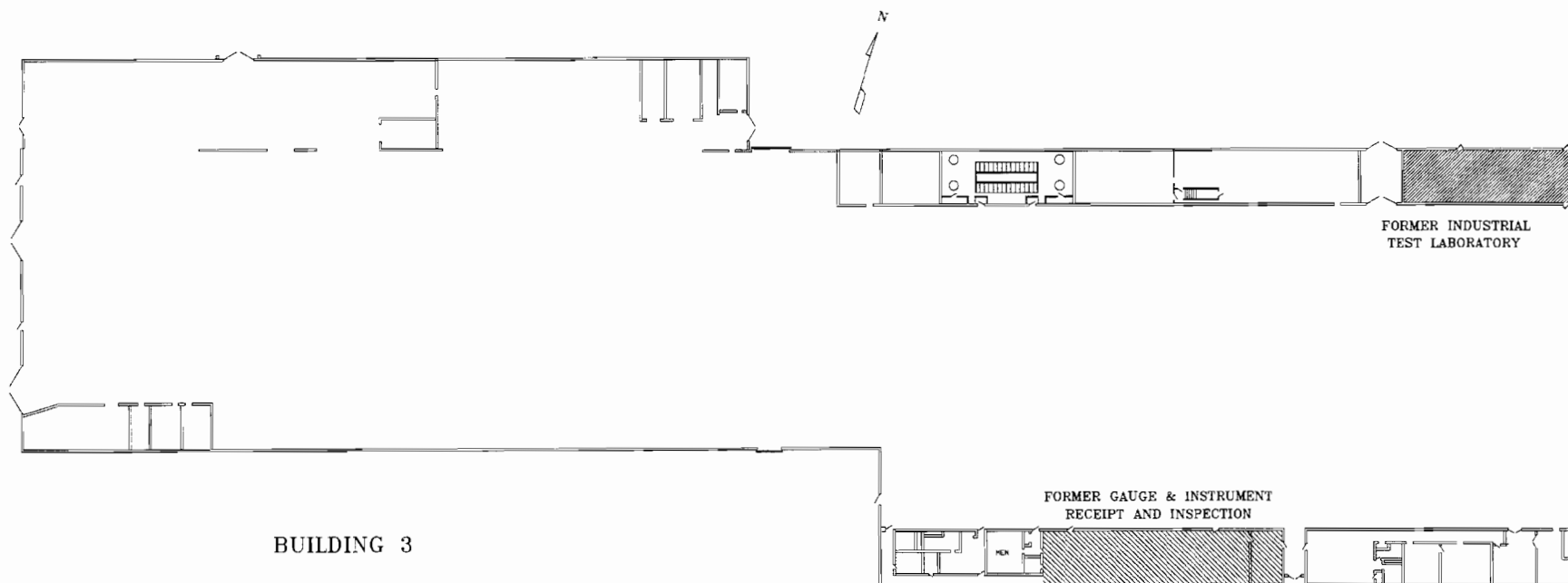
Section 2. Building 3

pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 24.10 pCi/100 cm² to a high of 36 pCi/100 cm² and the Th-232 levels ranged from a low of less than 22.30 pCi/100 cm² to a high of less than 82.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 2. Building 3

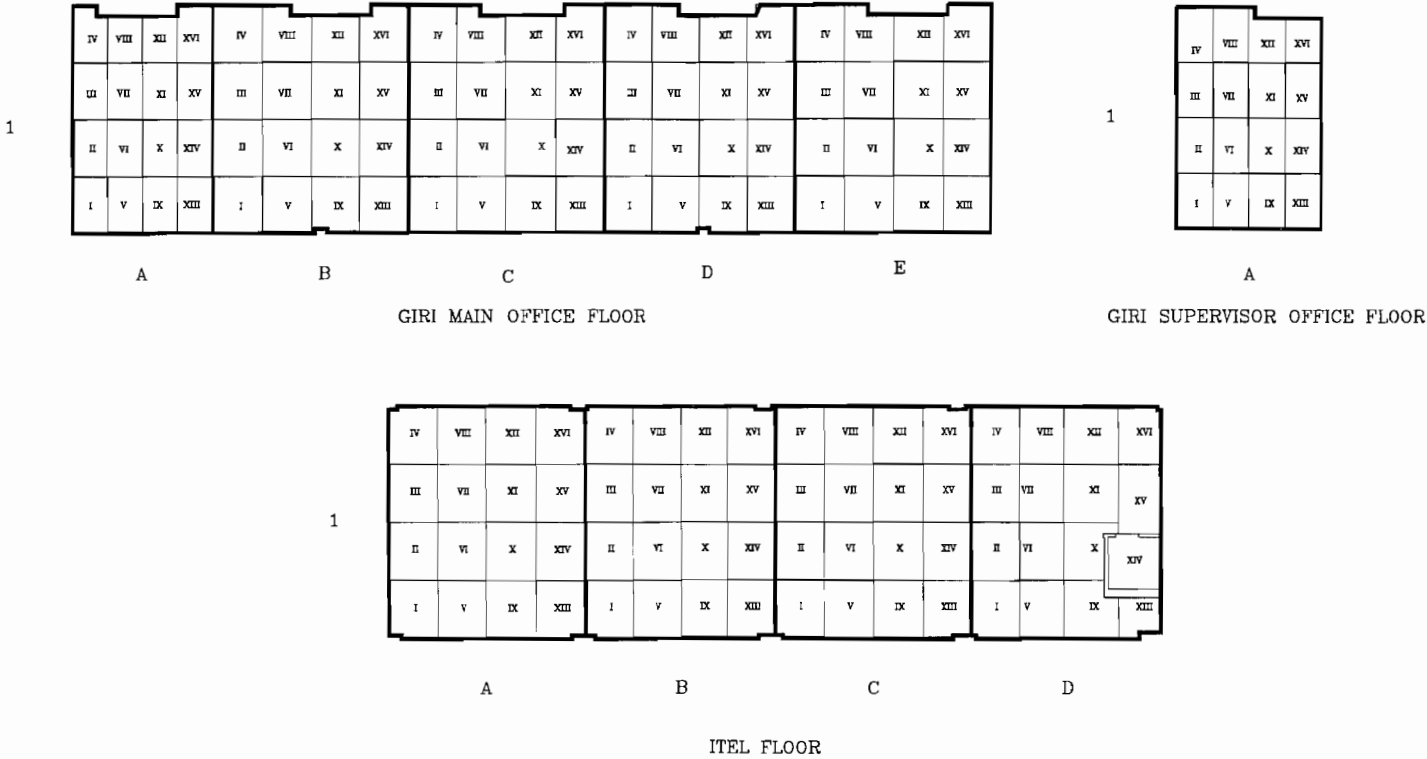
d. Site Map



CNSY G-RAM FINAL REPORT

Section 2. Building 3

e. Overall Grid Map

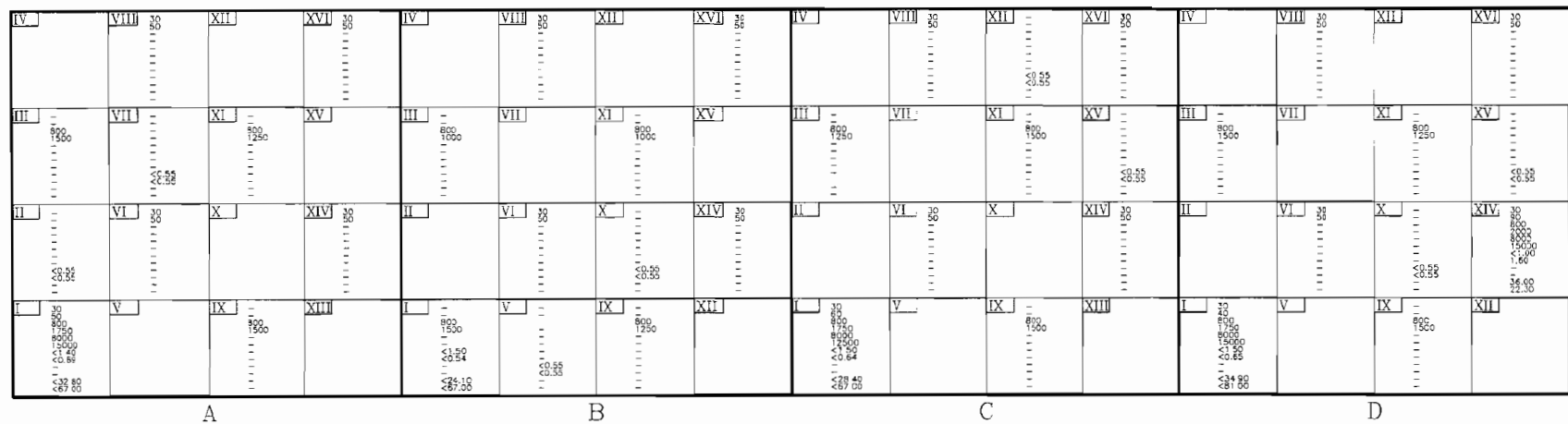


CNSY G-RAM FINAL REPORT

Section 2. Building 3

e. ITEL Localized Grid Maps

1



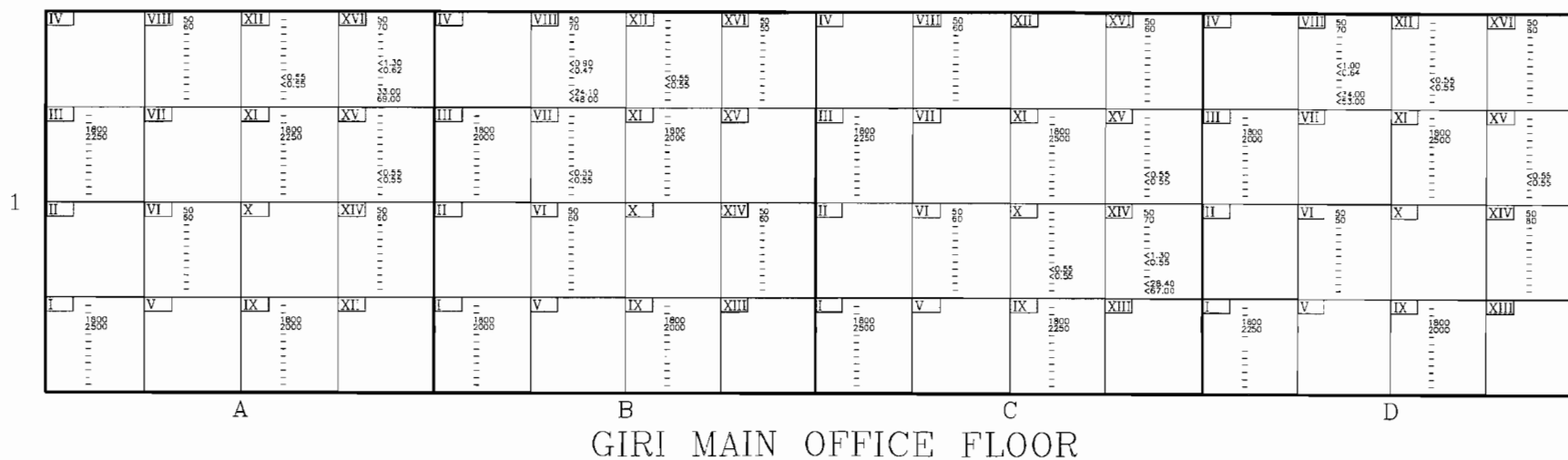
ITEL FLOOR

Data Legend:
 1 - IM-247/20 [Bq]
 2 - IM-247/20 [cpm]
 3 - IM-253/20 (HV-1 PHA) [Bq]
 4 - IM-253/20 (HV-1 PHA) [cpm]
 5 - IM-253/20 (HV-2 GROSS) [Bq]
 6 - IM-253/20 (HV-2 GROSS) [cpm]
 7 - Tl-232 Solid Sample [pCi/g]; Regulator value: <f above bkg of 3.2 pCi/g
 8 - Ra-226 Solid Sample [pCi/g]; Regulator value: <3 above bkg of 2.3 pCi/g
 9 - Removable Ra-226 [pCi/100cm²]; Regulator value: <9
 10 - Removable Th-232 [pCi/100cm²]; Regulator value: <50
 11 - Surface Radioactivity Ra-226 [pCi/100cm²]; Regulator value: <45
 12 - Surface Radioactivity Th-232 [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 2. Building 3

e. GIRI Localized Grid Maps



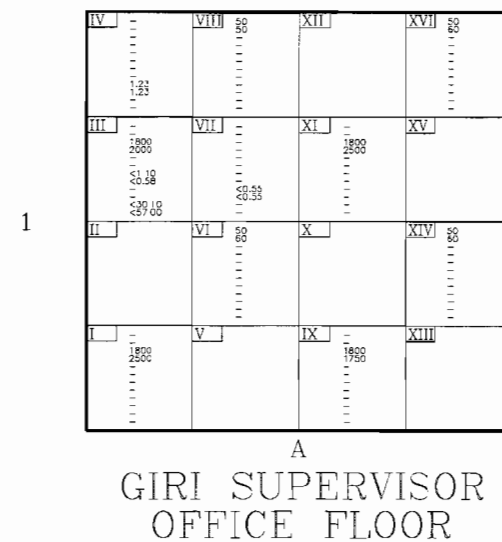
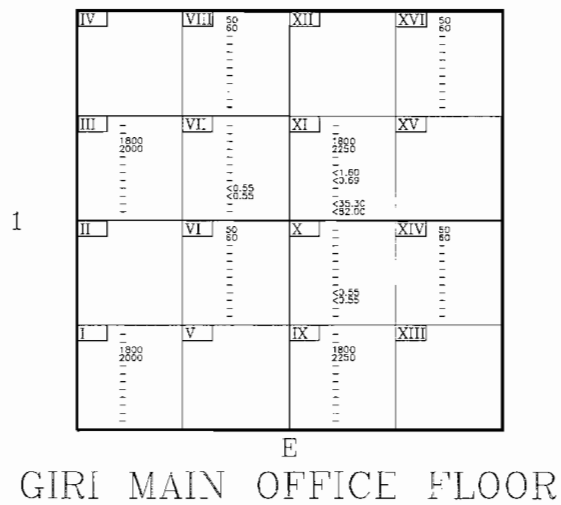
Data Legend:

1 - IM-247/PD [Bq]	7 - Th-232 Solid Sample [pCi/g]; Regulator value: <5 above bkg. of 3.2 dCi/g
2 - IM-247/PD [cpm]	8 - Ra-226 Solid Sample [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
3 - IM-253/PD (HV-1) PHA [Bq]	9 - Removable Ra-226 [pCi/100cm ²]; Regulator value: <3
4 - IM-253/PD (HV-1) PHA [cpm]	10 - Removable Th-232 [pCi/100cm ²]; Regulator value: <30
5 - IM-253/PD (HV-2) GROSS [Bq]	11 - Surface Radioactivity Ra-226 [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PD (HV-2) GROSS [cpm]	12 - Surface Radioactivity Th-232 [pCi/100cm ²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 2. Building 3

e. GIRI Localized Grid Map



Data Legend

1 - W-247/PD [Bq]	7 - Th-232 Solid Sample [pCi/g]. Regulator value: <5 above bkg of 3.2 pCi/g
2 - W-247/PD [cpm]	8 - Ra-226 Solid Sample [pCi/g]. Regulator value: <5 above bkg of 2.3 pCi/g
3 - W-253/PD [W-1 PHA] [Bq]	9 - Removable Ra-226 [pCi/100cm ²]. Regulator value: <3
4 - W-253/PD [W-1 PHA] [cpm]	10 - Removable Th-232 [pCi/100cm ²]. Regulator value: <50
5 - W-253/PD [W-2 GROSS] [Bq]	11 - Surface Radioactivity Ra-226 [pCi/100cm ²]. Regulator value: <45
6 - W-253/PD [W-2 GROSS] [cpm]	12 - Surface Radioactivity Th-232 [pCi/100cm ²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 2. Building 3

f. Photographs



Gauge and Instrument Receipt and Inspection Area

CNSY G-RAM FINAL REPORT

Section 2. Building 3

f. Photographs



GIRI Crack and crevice swab sites.

CNSY G-RAM FINAL REPORT

Section 2. Building 3

f. Photographs



GIRI Crack and crevice swab sites.

CNSY G-RAM FINAL REPORT

Section 2. Building 3

f. Photographs



Industrial Test Laboratory

CNSY G-RAM FINAL REPORT

Section 2. Building 3

f. Photographs



ITEL Crack and crevice swab sites.

CNSY G-RAM FINAL REPORT

Section 2. Building 3

f. Photographs



ITEL Crack and crevice swab sites.

CNSY G-RAM FINAL REPORT

Section 3. Building 10

a. Introduction:

Building 10 was built in 1918 to support the Machinist Mate School. It is located on Fifth Street outside the Controlled Industrial Area.

(1) Description:

Building 10 is a three story, rectangular building, with concrete block walls and foundation. The exterior walls have a painted finish coat.

(2) Brief History:

(a) **Use:** Building 10 has one area that received a RASP release survey. This specific site is located on the first floor, northwest corner of the building. The area was used for storage of encapsulated radioactive sources which were used for RADIAC calibration, as well as storage for the RADIACs themselves. This area was also used for limited maintenance on electronic equipment having radioactive components. Specifically, radioluminous markers were removed from electronic jack and junction boxes.

(b) **Radiological History:** Radiological history indicates that no known spills of radioactivity occurred and no contamination above the limit has been detected.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The Building 10, RADIAC Source Storage Area, was divided into nine grids approximately 20' by 20'. Each of these grids was subdivided into 5' by 5' sub-grids.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least four pre-determined 5' by 5' sub-grids in each grid to represent 25% of the total grid surface.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least four other pre-determined sub-grids in each grid to represent 25% of the total grid surface.

A wide gamma energy range scintillation walk-through scan survey with the IM-

CNSY G-RAM FINAL REPORT

Section 3. Building 10

253/PD (GROSS mode) was performed over the specific site.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 10 were determined from similar materials in the first floor parking lot of Building 400.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels all ranged from a low of less than 0.55 pCi/100 cm² to a high of less than 0.56 pCi/100 cm².

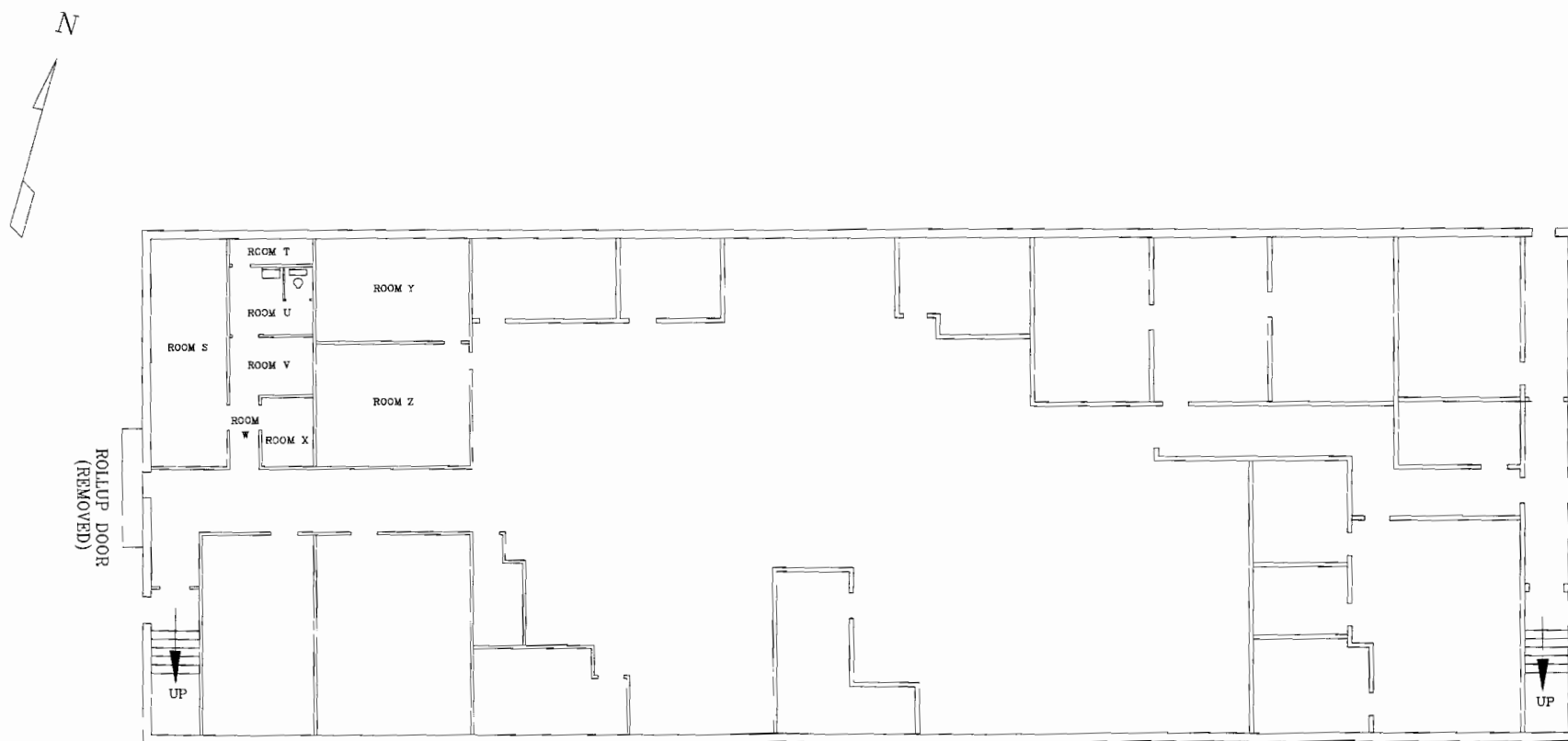
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of less than 0.60 pCi/g to a high of less than 1.50 pCi/g and Th-232 solid material samples ranged from a low of less than 1.10 pCi/g to a high of less than 2.20 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 5.50 pCi/100 cm² to a high of less than 39.80 pCi/100 cm² and the Th-232 levels ranged from a low of less than 11.00 pCi/100 cm² to a high of less than 83.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 3. Building 10

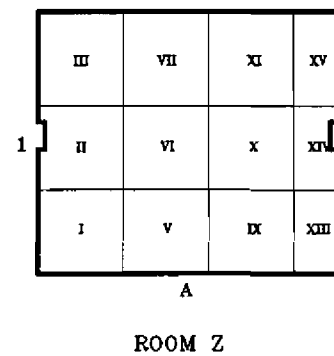
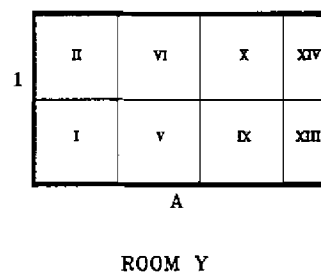
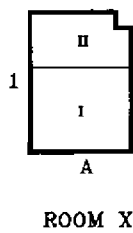
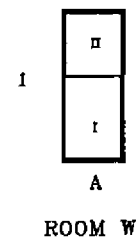
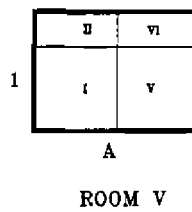
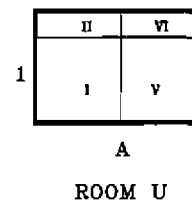
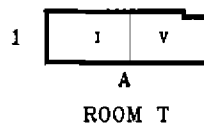
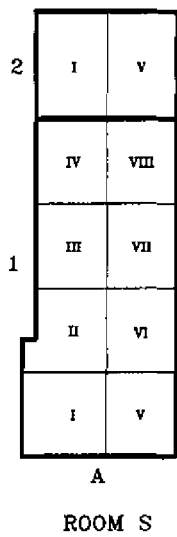
e. Site Map



CNSY G-RAM FINAL REPORT

Section 3. Building 10

e. Overall Grid Map



e. Localized Grid Map

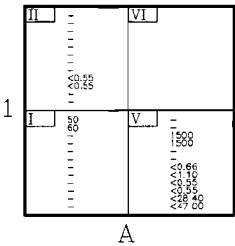


7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm2]: Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm2]: Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm2]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm2]: Regulator value: <450

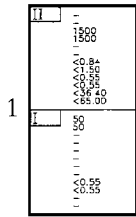
CNSY G-RAM FINAL REPORT

Section 3. Building 10

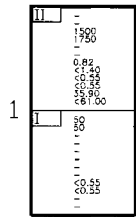
e. Localized Grid Map



V-FLOOR



W-FLOOR



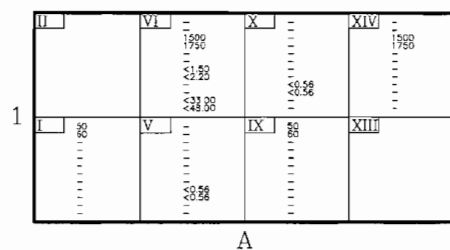
X-FLOOR

Data Legend:
1 - IM-247/PD [bkg]
2 - IM-247/PD [cpm]
3 - IM-253/PD (HV-1 PHA) [bkg]
4 - IM-253/PD (HV-1 PHA) [cpm]
5 - IM-253/PD (HV-2 GROSS) [bkg]
6 - IM-253/PD (HV-2 GROSS) [cpm]
7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

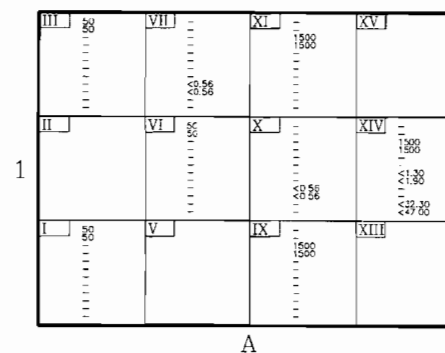
CNSY G-RAM FINAL REPORT

Section 3. Building 10

e. Localized Grid Map



Y-FLOOR



Z-FLOOR

Data Legend:

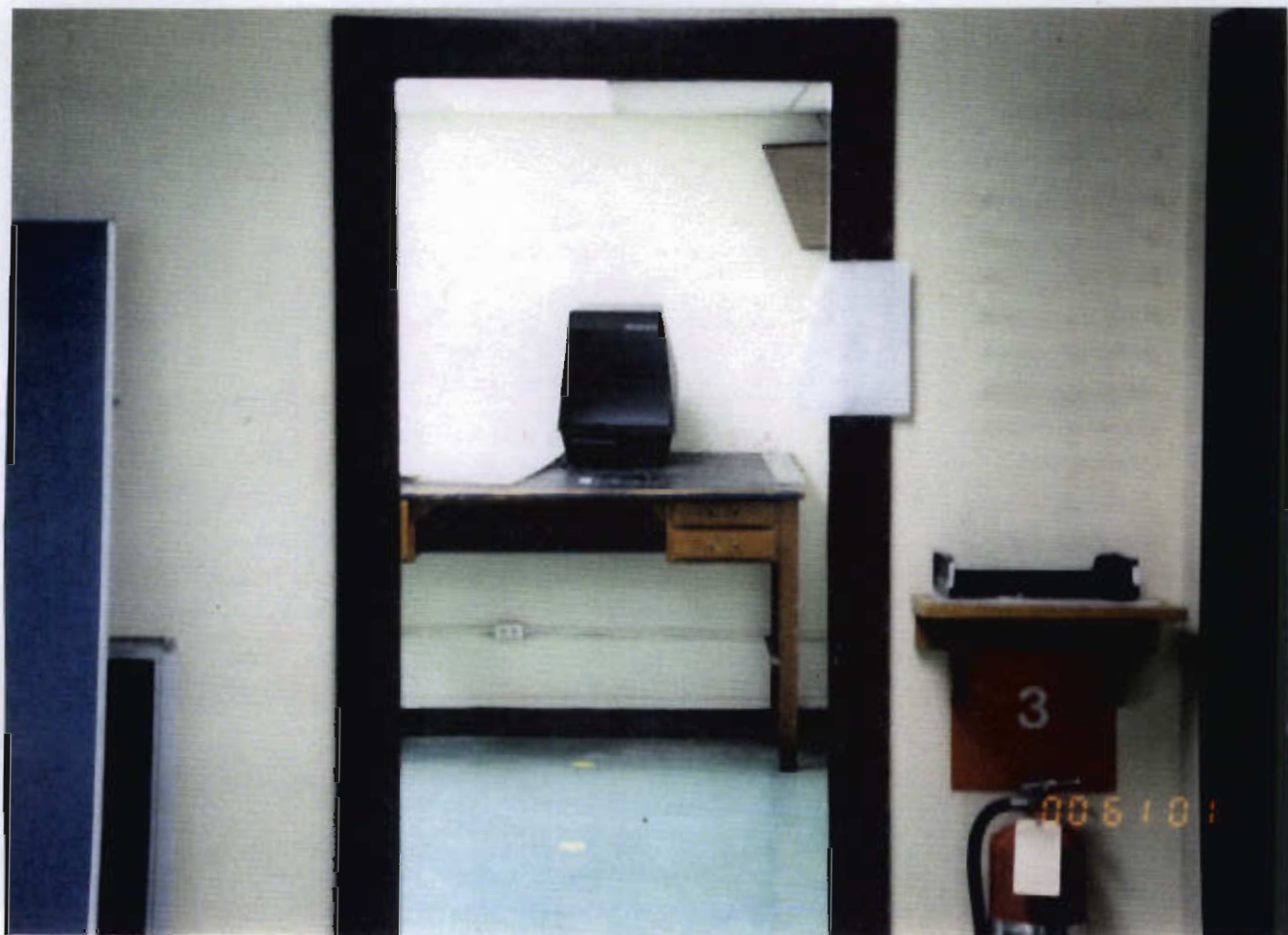
- 1 - IM-247/PD [pkg.]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [pkg.]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [pkg.]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]

- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 3. Building 10

f. Photographs



Bldg 10 Room Z

CNSY G-RAM FINAL REPORT

Section 3. Building 10

f. Photographs



Bldg 10 Room Z

CNSY G-RAM FINAL REPORT

Section 3. Building 10

f. Photographs



Bldg 10 Room S

CNSY G-RAM FINAL REPORT

Section 4. Building 11

a. Introduction:

Building 11 was built in 1918 as a sheet metal shop. It is located at the intersection of River Road and Dry Dock Ave, inside the Controlled Industrial Area.

(1) Description:

The building is constructed of concrete block walls, resting on a concrete foundation, and is rectangular in shape.

(2) Brief History:

(a) **Use:** The area of interest in Building 11 was the Hot House, which is located on the southeast end. This was an area used by the Welding Shop to store, issue, and prepare tungsten electrodes.

(b) **Radiological History:** No other radiological work operations were performed in this area. Radiological history indicates that no loose surface contamination above the limit has been detected.

(3) Survey Requirements:

(a) Class B release survey.

b. Discussion:

The floor of Building 11, Hot House Area, was divided into a total of eight grids with a maximum size of 10' by 10'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'. The size and configuration of this site only allowed for 28 sub-grids.

The walls were horizontally divided into 10 grids with a maximum size of 6' high and 10' wide. Each of these wall grids was subdivided into sub-grids with an approximate size of 3' high by 5' wide.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface. The IM-247/PD results are grid specific, not sub-grid specific. The results shown on the localized grid map in each sub-grid indicate the highest potential found in the entire grid. Solid samples for greater than or equal to twice background results are taken only in the sub-grid(s) that contain the highest potential area(s).

CNSY G-RAM FINAL REPORT

Section 4. Building 11

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over two diagonal quadrants to represent 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other two diagonal quadrants to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of two solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 11 Hot House were determined from similar materials in Building 1800.

c. Summary:

Surveys performed with the IM-247/PD detected 3 grids having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) detected eight sub-grids greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) detected eight sub-grids greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.55 pCi/100 cm² to a high of 1.93 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.23 pCi/g to a high of 1.29 pCi/g and Th-232 solid material samples ranged from a low of less than 0.43 pCi/g to a high of less than 1.70 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less

CNSY G-RAM FINAL REPORT

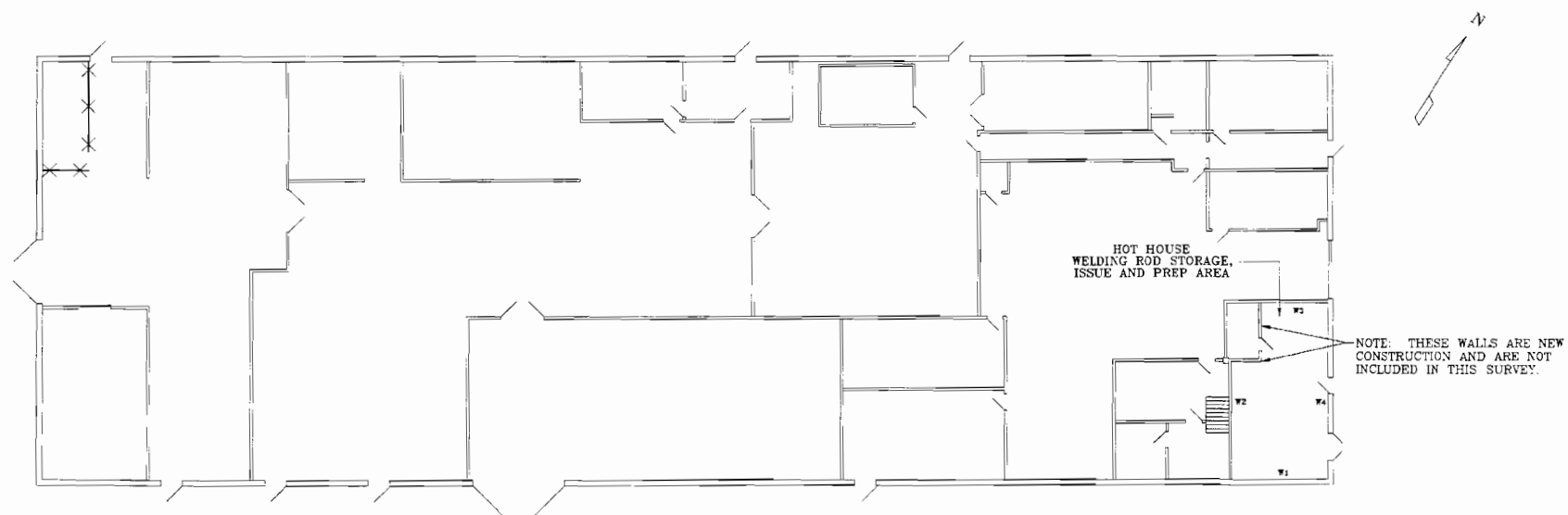
Section 4. Building 11

than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 3.40 pCi/100 cm² to a high of 21.80 pCi/100 cm² and the Th-232 levels ranged from a low of less than 7.00 pCi/100 cm² to a high of less than 42.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 4. Building 11

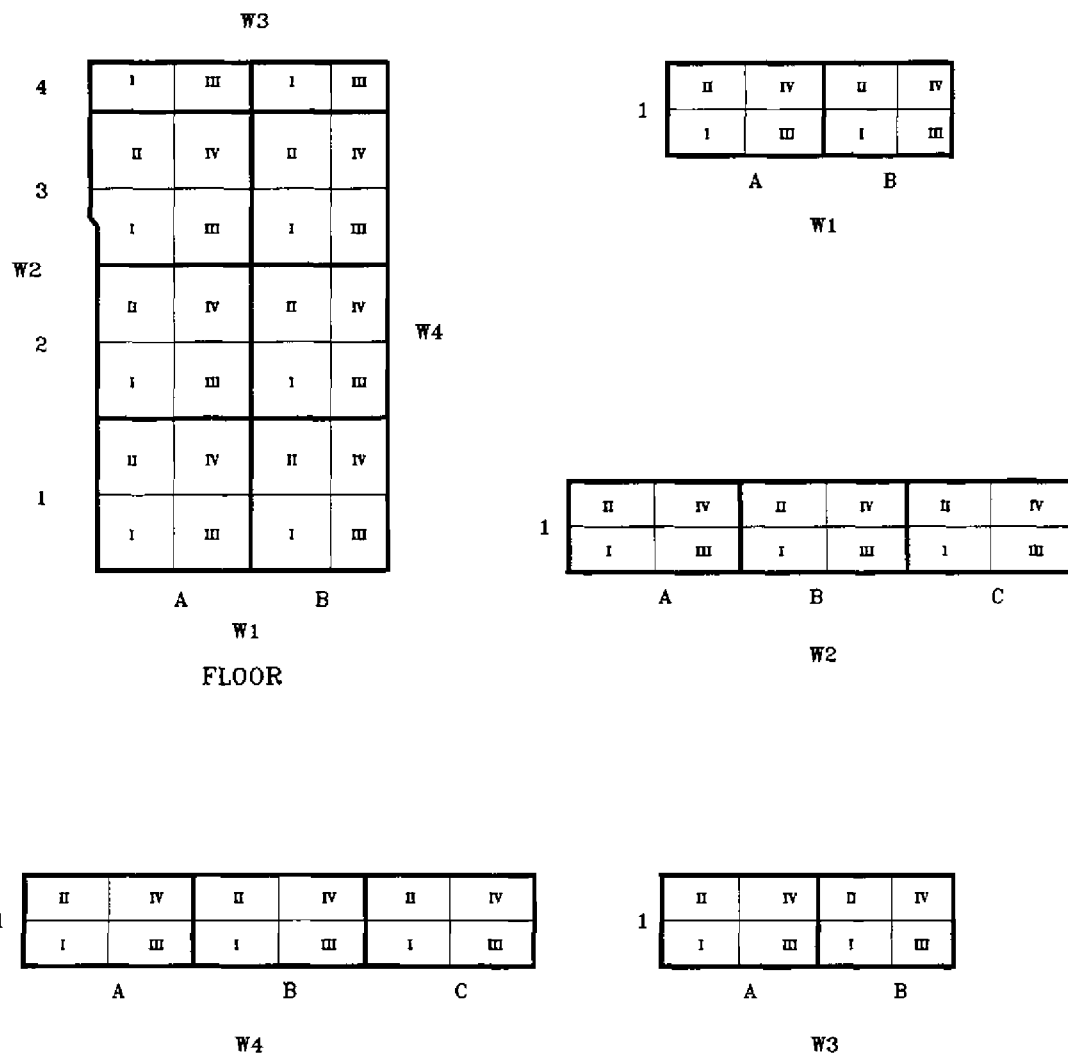
e. Site Map



CNSY G-RAM FINAL REPORT

Section 4. Building 11

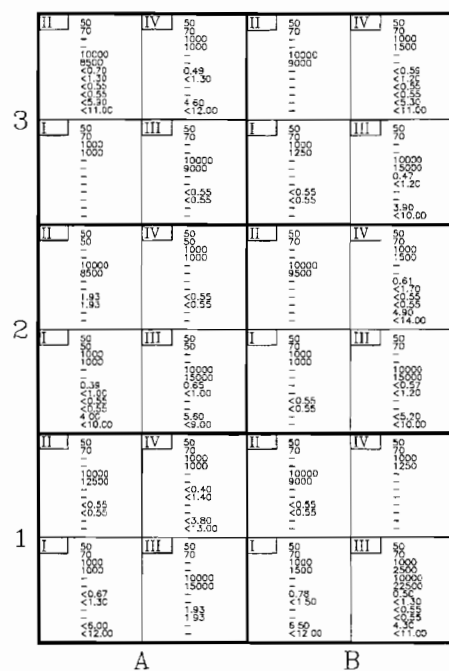
e. Overall Grid Map



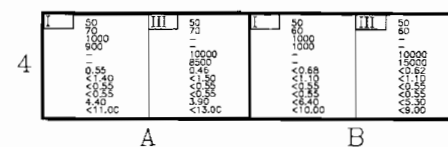
CNSY G-RAM FINAL REPORT

Section 4. Building 11

e. Localized Grid Map



FLOOR

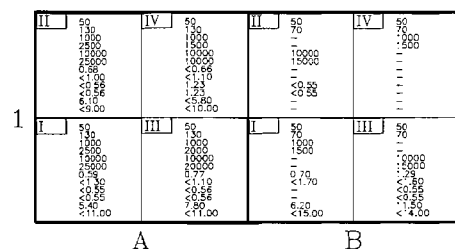


FLOOR

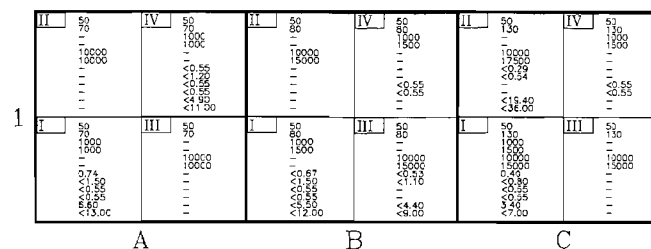
Data Legend
 1 - M-247/PD [Bq/l]
 2 - M-247/PD [cpm]
 3 - M-233/PD (HV-1 P/A) [Bq/l]
 4 - M-233/PD (HV-1 P/A) [cpm]
 5 - M-233/PD (HV-2 GROSS) [Bq/l]
 6 - M-233/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.2 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

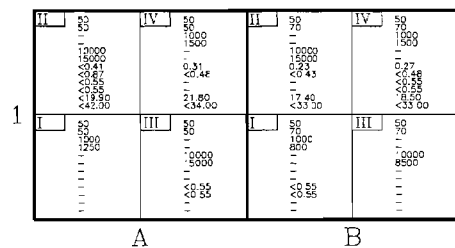
Section 4. Building 11



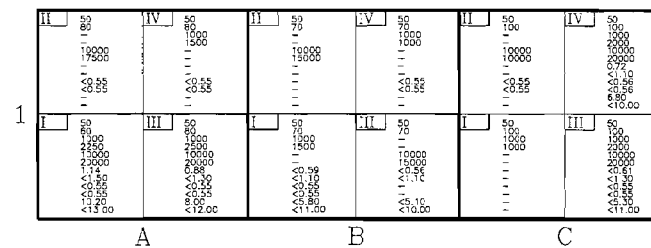
W1



W2



W3



W4

Data Legend:

1	IM-247/PD	[bkg.]	
2	IM-247/PD	[cpm]	
3	IM-253/PD	HV-1	FHA [bkg.]
4	IM-253/PD	HV-1	FHA [cpm]
5	IM-253/PD	HV-2	GROSS [bkg.]
6	IM-253/PD	HV-2	GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [$\mu\text{Ci/g}$]: Regulator value: <5 above bkg. of 2.3 $\mu\text{Ci/g}$
 8 - Th-232 Solid Sample Radioactivity [$\mu\text{Ci/g}$]: Regulator value: <5 above bkg. of 3.2 $\mu\text{Ci/g}$
 9 - Ra-226 Removable Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]: Regulator value: <9
 10 - Th-232 Removable Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]: Regulator value: <90
 11 - Ra-226 Surface Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]: Regulator value: <45
 12 - Th-232 Surface Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]: Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 4. Building 11

f. Photographs

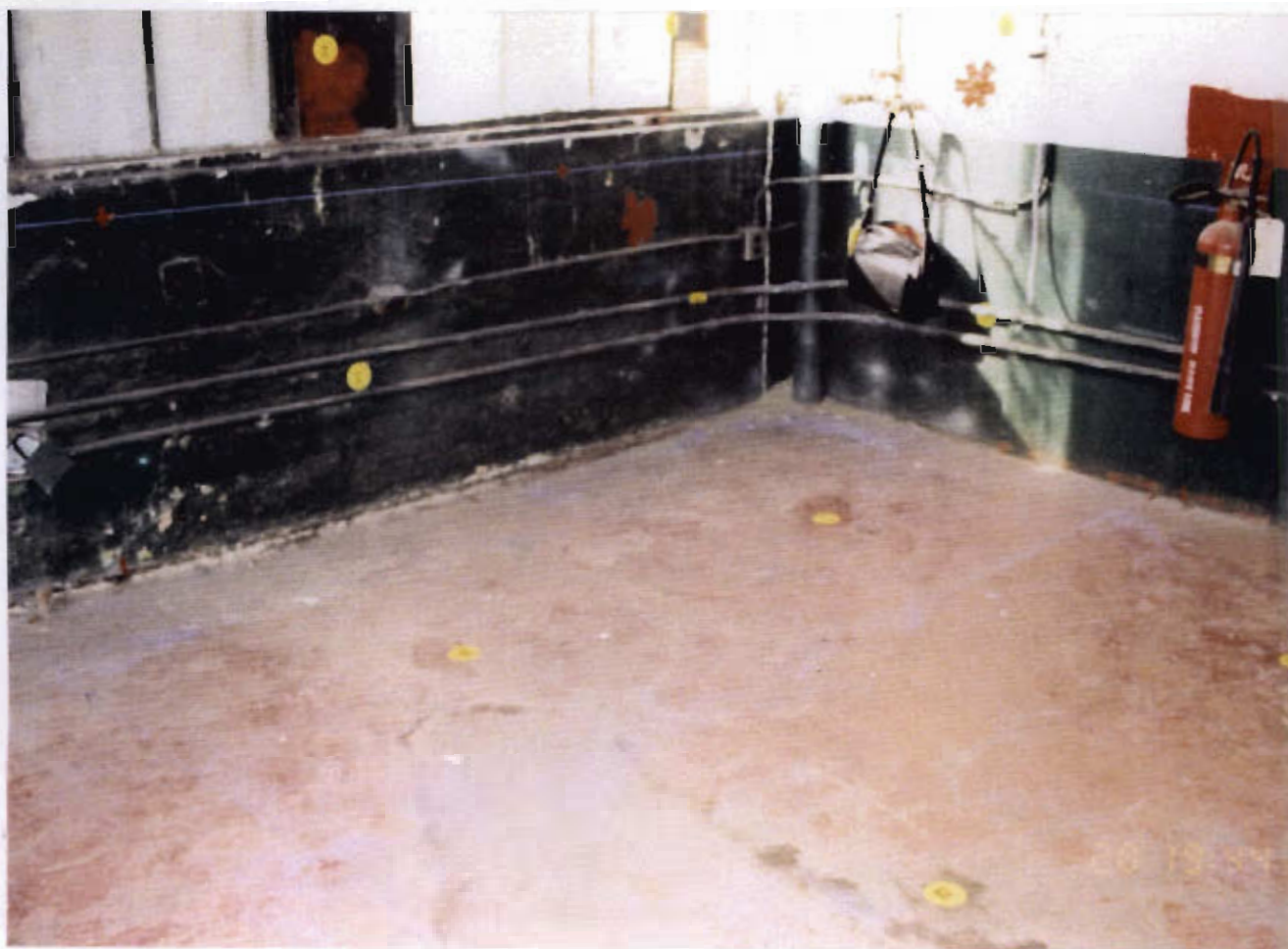


Hot House Welding Rod Storage, Issue and Prep Area, viewing north.

CNSY G-RAM FINAL REPORT

Section 4. Building 11

f. Photographs



Hot House Welding Rod Storage, Issue and Prep Area, viewing south.

CNSY G-RAM FINAL REPORT

Section 4. Building 11

f. Photographs



Hot House Welding Rod Storage, Issue and Prep Area, viewing east.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

a. Introduction:

Building 13 was built in 1909 originally as a clothing factory. Building 13 is located at Fifth Street and Hobson Avenue inside the Controlled Industrial Area.

(1) Description:

Building 13 is a three level structure of rectangular plan. Wall construction is of red brick. There are two connected additions, one constructed of brick, the other of concrete.

(2) Brief History:

(a) **Use:** Building 13 housed nuclear and non-nuclear Quality Assurance, Non-destructive Testing, and the Chemistry Division for CNSY. Building 13 first floor has nine areas that received a G-RAM release survey.

(b) **Radiological History:** In the five Radiography Rooms, the Source Storage Vault, the Radiography Equipment and Source Storage Room, and the NDT Room, sealed radiography sources were used and stored. These areas received a Class B release survey. The Contaminated Waste Storage Room received a Class C release survey.

(3) Survey Requirements:

- (b) Class B release survey.
- (c) Class C release survey.

b. Discussion:

Class B:

For the Class B survey, the floors of the five Radiography Rooms, Source Storage Vault, the NDT Room and Radiography Equipment and Source Storage Room were divided into a total of 53 grids with a maximum size of 10' by 10'. Each of these grids were subdivided into sub-grids with an approximate size of 5' by 5'.

The walls were horizontally divided into 146 grids with a maximum size of 6' high and 10' wide. Each of these wall grids were subdivided into sub-grids with an approximate size of 3' high by 5' wide.

Each grid and sub-grid was identified with its own unique designator.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of two solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Class C:

For the Class C survey the floor of the Contaminated Waste Storage Room was divided into six grids with a maximum size of 5' by 5'.

The walls were horizontally divided into 11 grids with a maximum size of 6' high and 5' wide.

Each grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over 100% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over 100% of the grid surface.

A minimum of one swipe/smear was taken in each grid.

A minimum of 25% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

Background levels used in Building 13 were determined from similar materials in Building 1800.

c. Summary:

Class B Summary:

Surveys performed in the Class B areas with the IM-247/PD detected three areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than 9 pCi/100 cm² and removable Th-232 levels were less than 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.60 pCi/100 cm² to a high of 1.53 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 specific radioactivity levels were less than 5 pCi/g above background. The analysis revealed that Ra-226 levels ranged from a low of less than 0.18 pCi/g to a high of 3.68 pCi/g and Th-232 levels ranged from a low of less than 0.19 pCi/g to a high of less than 4.90 pCi/g.

Mathematical computation of the surface radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The Ra-226 levels ranged from a low of 2.70 pCi/100 cm² to a high of less than 36.20 pCi/100 cm². The Th-232 levels ranged from a low of less than 3.00 pCi/100 cm² to a high of less than 142.00 pCi/100 cm².

Class C Summary:

Surveys performed in the Class C areas with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than 9 pCi/100 cm² and removable Th-232 levels were less than 90 pCi/100 cm². The alpha/beta analyzer results indicated that all removable Ra-226 and Th-232 levels were less than 0.93 pCi/100 cm².

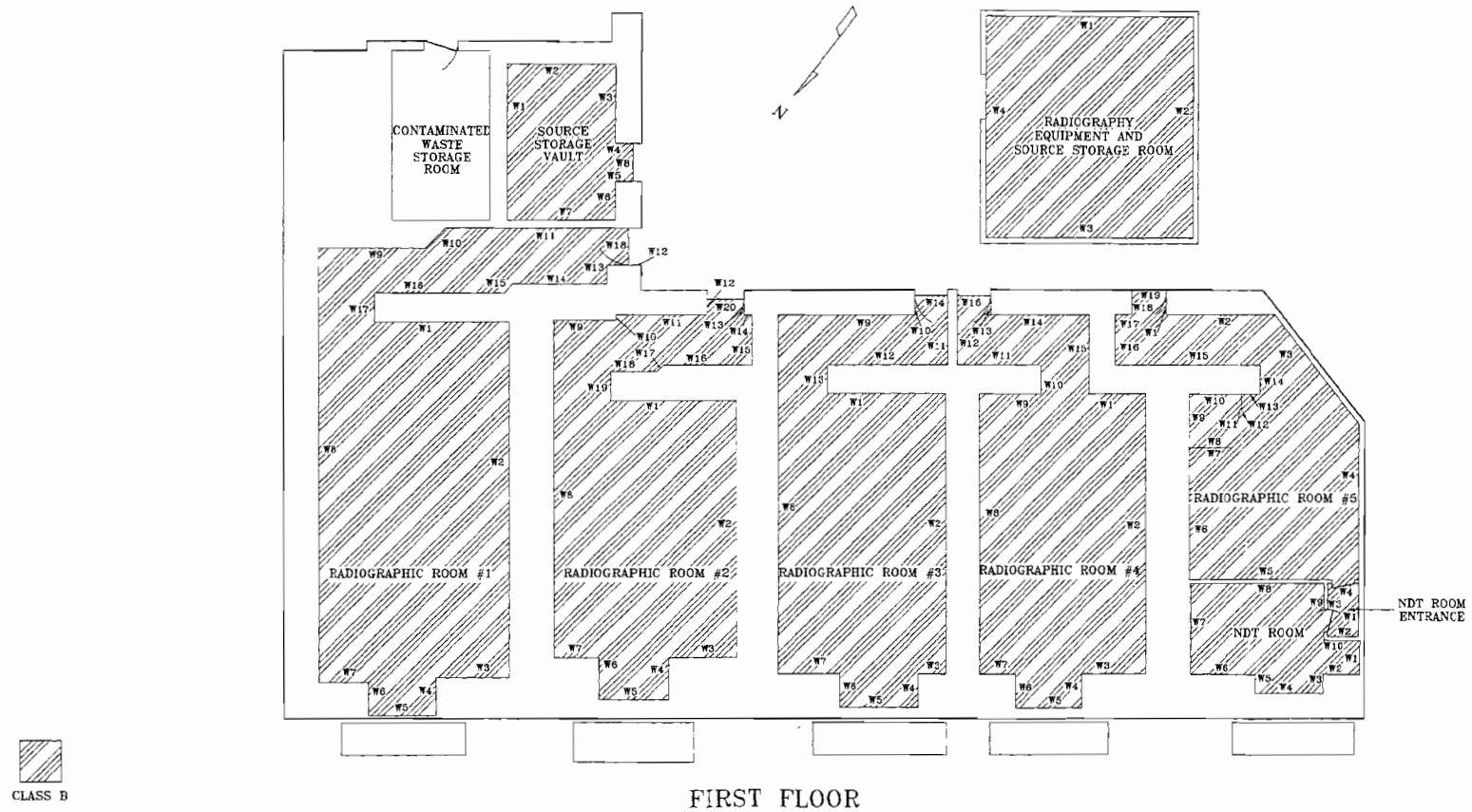
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 specific radioactivity levels were less than 5 pCi/g above background. The analysis revealed that Ra-226 levels ranged from 0.53 pCi/g to less than 2.13 pCi/g and Th-232 levels ranged from less than 1.20 pCi/g to less than 4.20 pCi/g.

Mathematical computation of the surface radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The Ra-226 levels ranged from a low of less than 4.60 pCi/100 cm² to a high of 11.40 pCi/100 cm². The Th-232 levels ranged from a low of less than 9.00 pCi/100 cm² to a high of less than 15.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

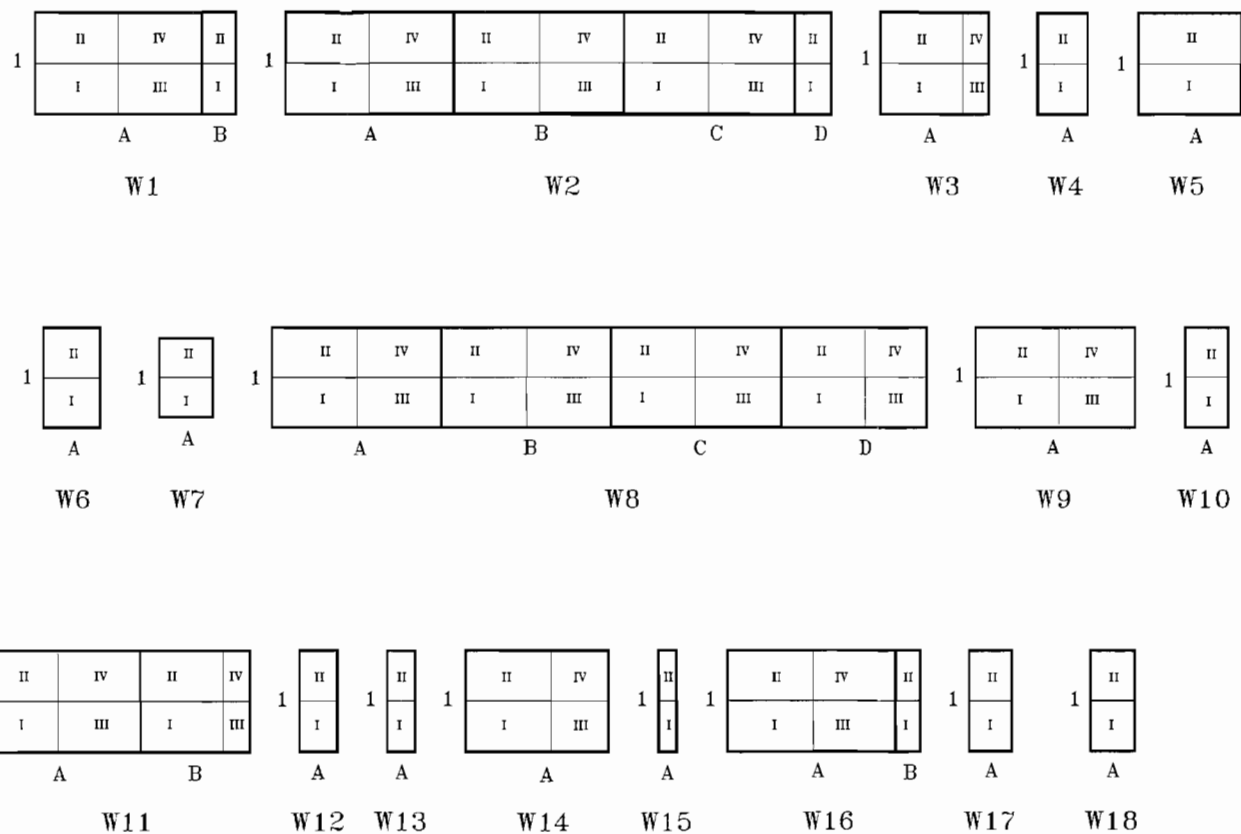
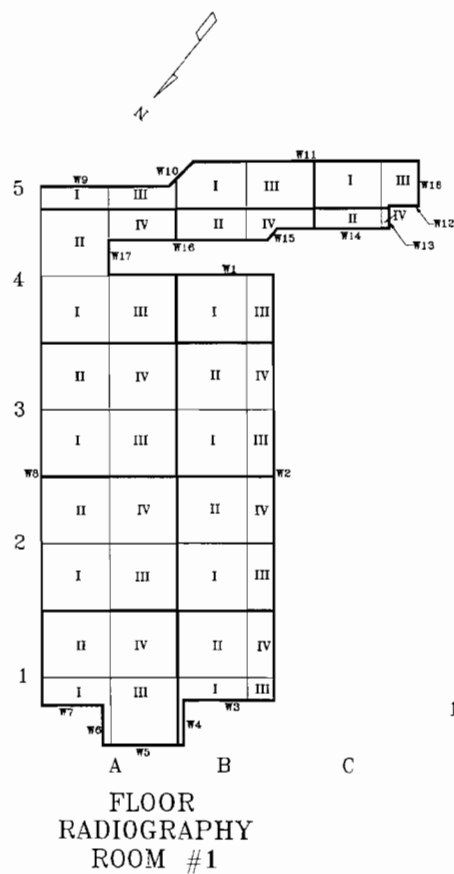
d. Site Map, Class B



CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Overall Grid Map, Class B



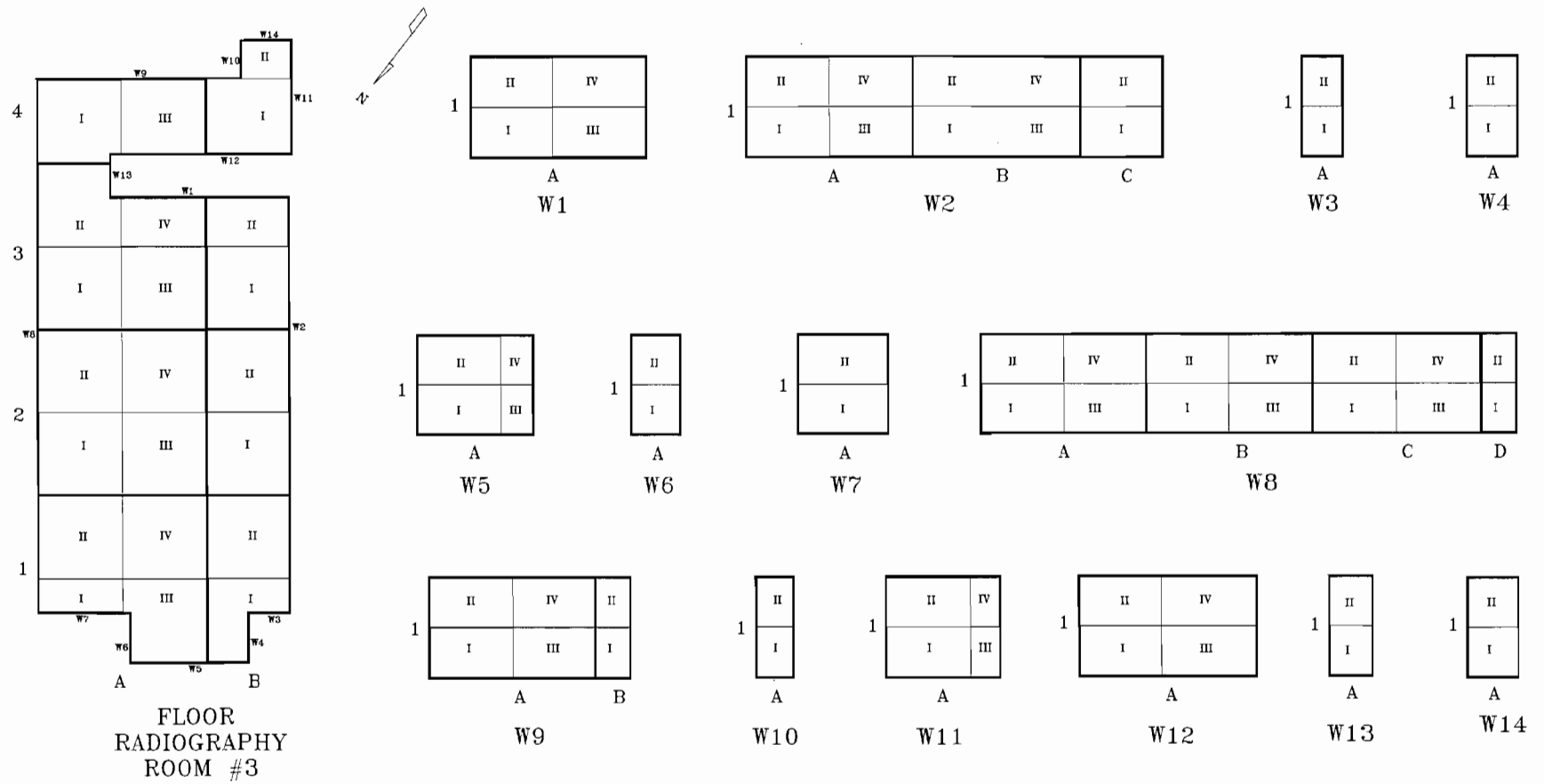
d. Overall Grid Map, Class B



CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

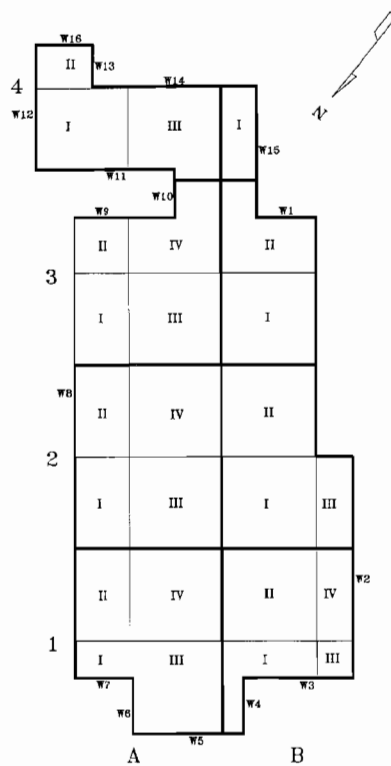
d. Overall Grid Map, Class B



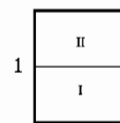
CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Overall Grid Map, Class B



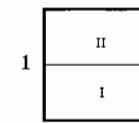
FLOOR
RADIOGRAPHY
ROOM #4



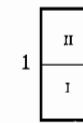
W1



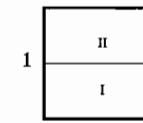
W2



W3



W4



W5



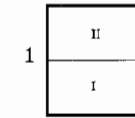
W6



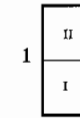
W7



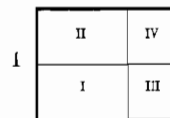
W8



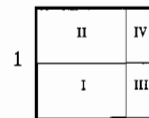
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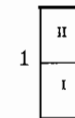
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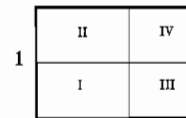
W11



W12



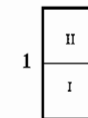
W13



W14



W15

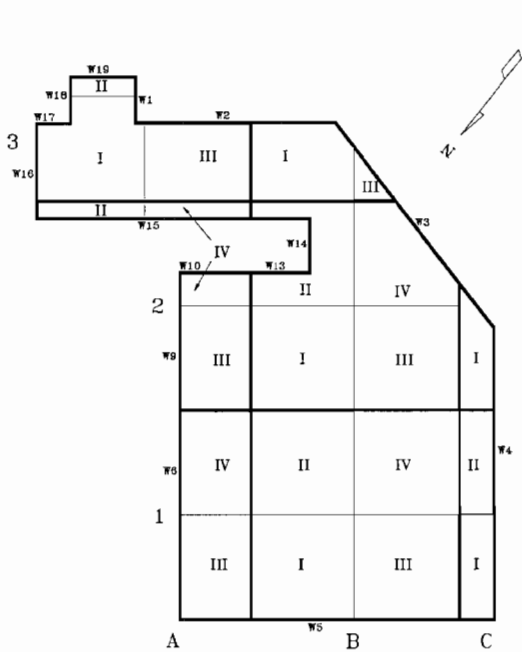


W16

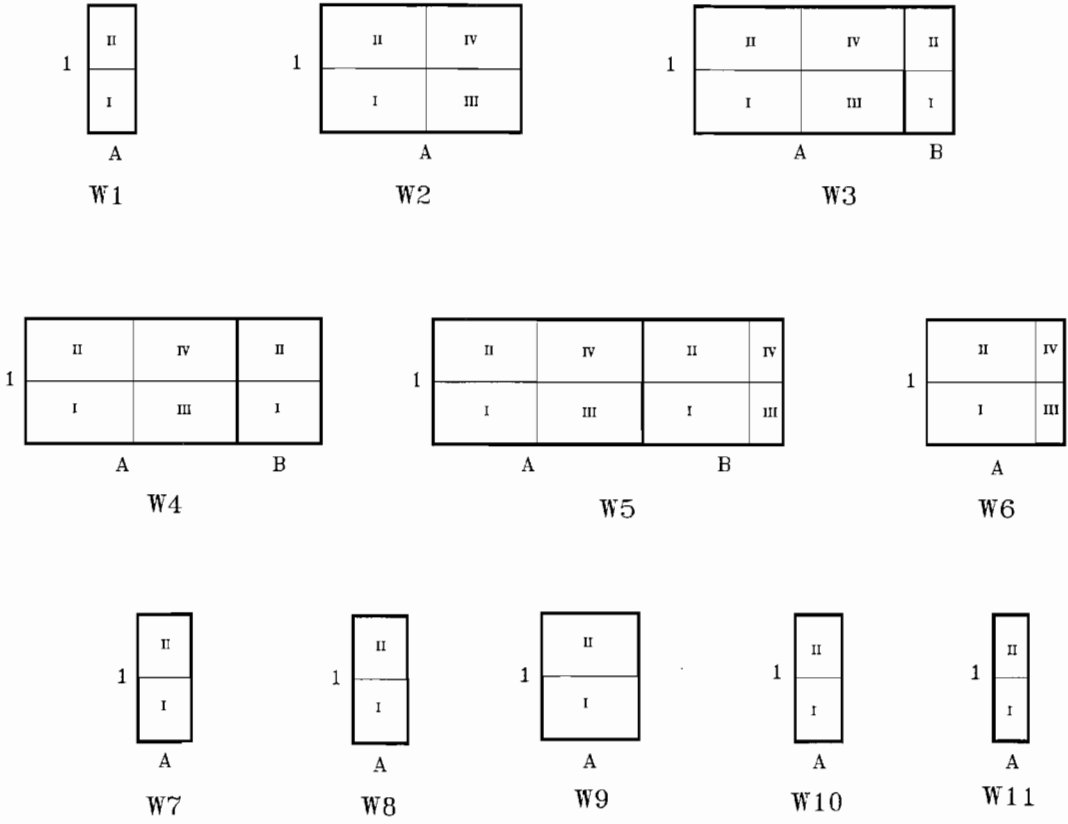
CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Overall Grid Map, Class B



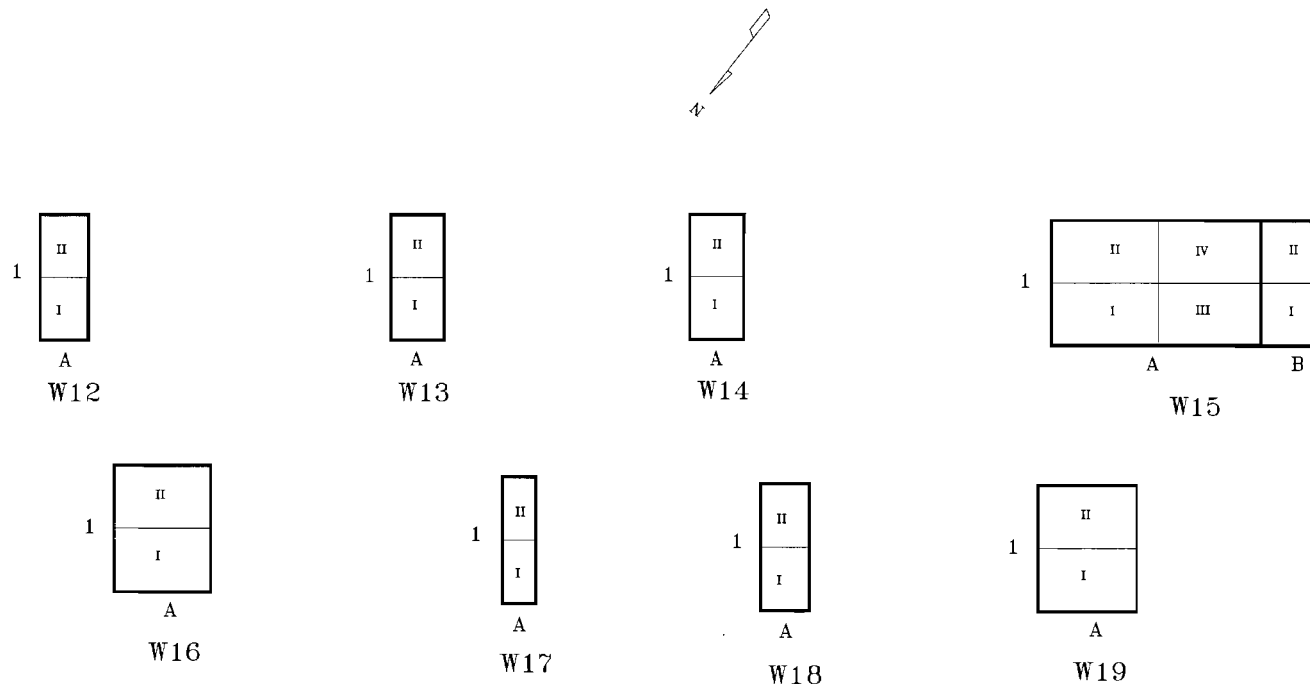
FLOOR
RADIOGRAPHY
ROOM #5



CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

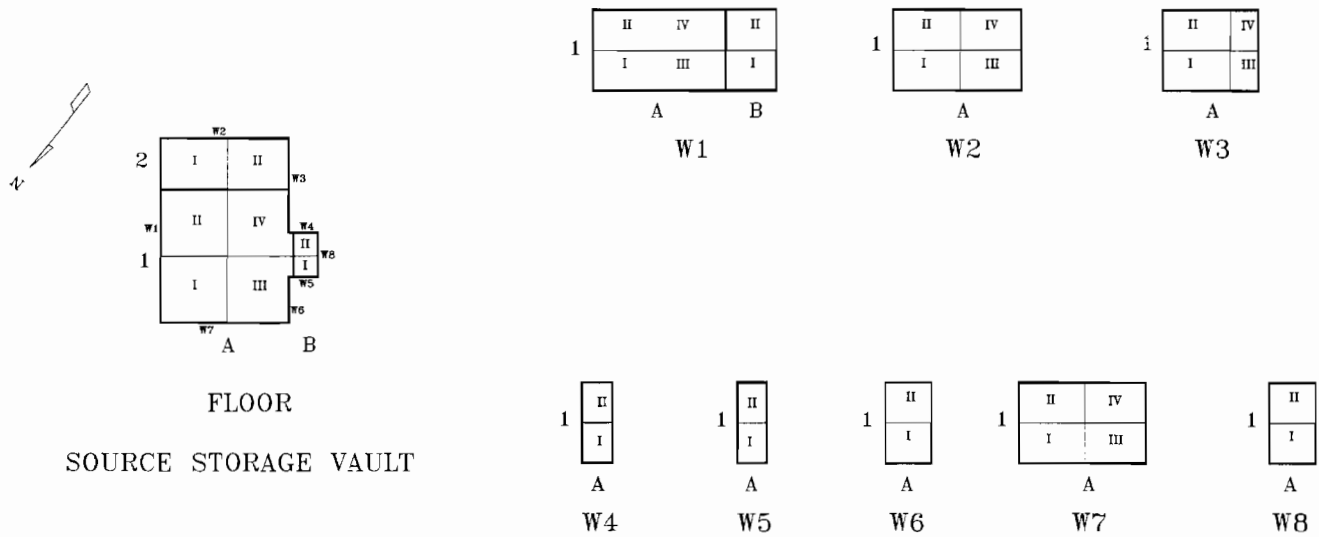
d. Overall Grid Map, Class B

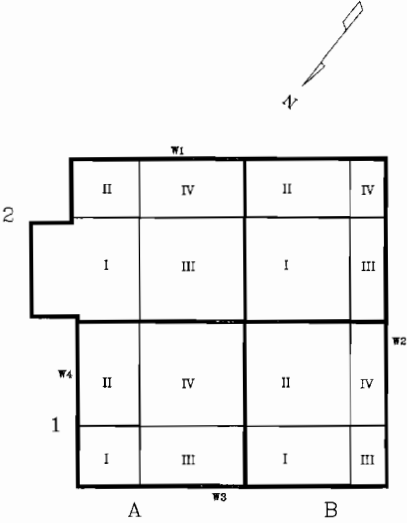


Radiographic Room #5 Walls (Continued)

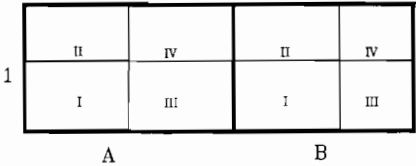
d. Overall Grid Map, Class B



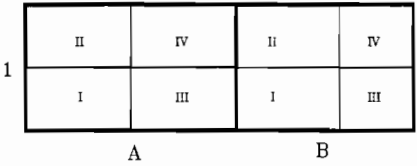




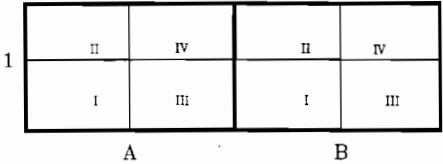
FLOOR
RADIOGRAPHY EQUIP. &
SOURCE STORAGE ROOM



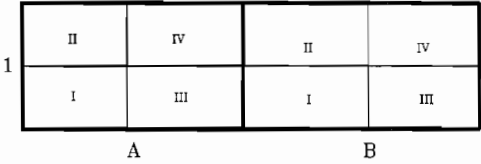
W1



W3



W2



W4

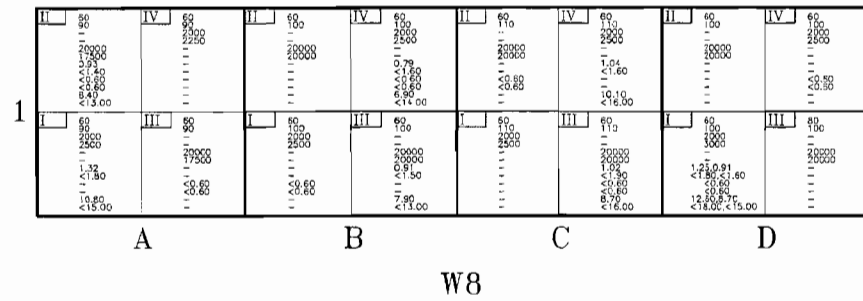
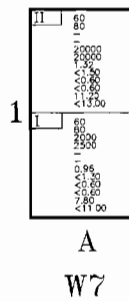
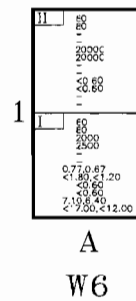
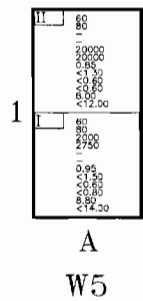
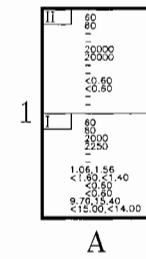
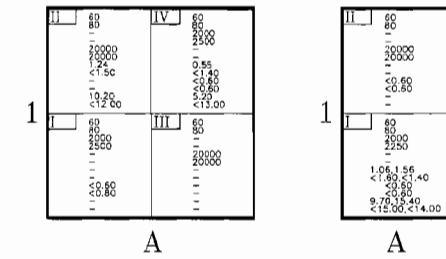
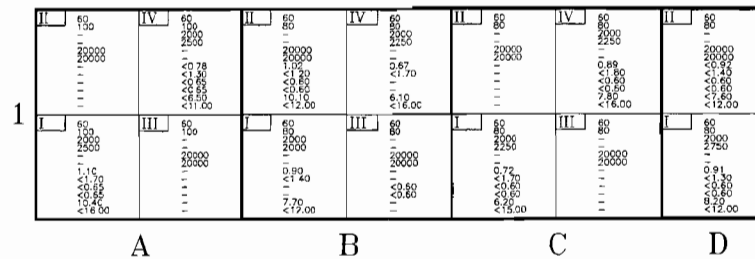
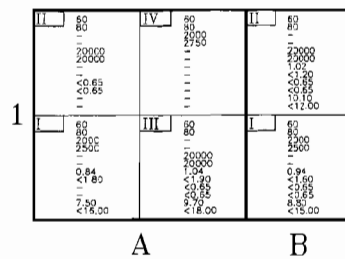
d. Localized Grid Map

15

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Localized Grid Map, Radiography Room No.1



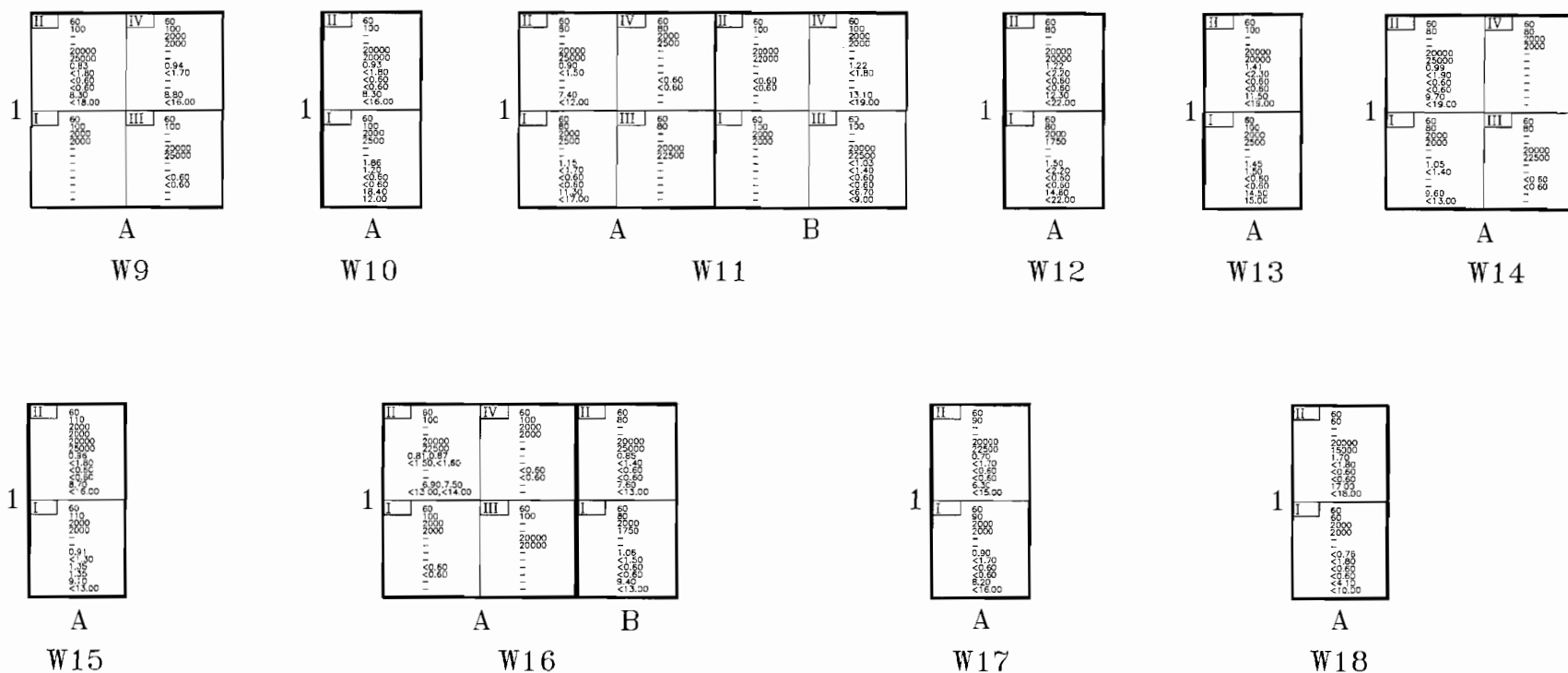
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 3 - M-253/PD [Bq/L]
 4 - M-253/PD [cpm]
 5 - M-253/PD [Bq/L]
 6 - M-253/PD [cpm]

7 - Ra-228 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-228 Removable Radioactivity [pCi/100cm²]. Regulator value: <5
 10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <5
 11 - Ra-228 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Localized Grid Map, Radiography Room No.1



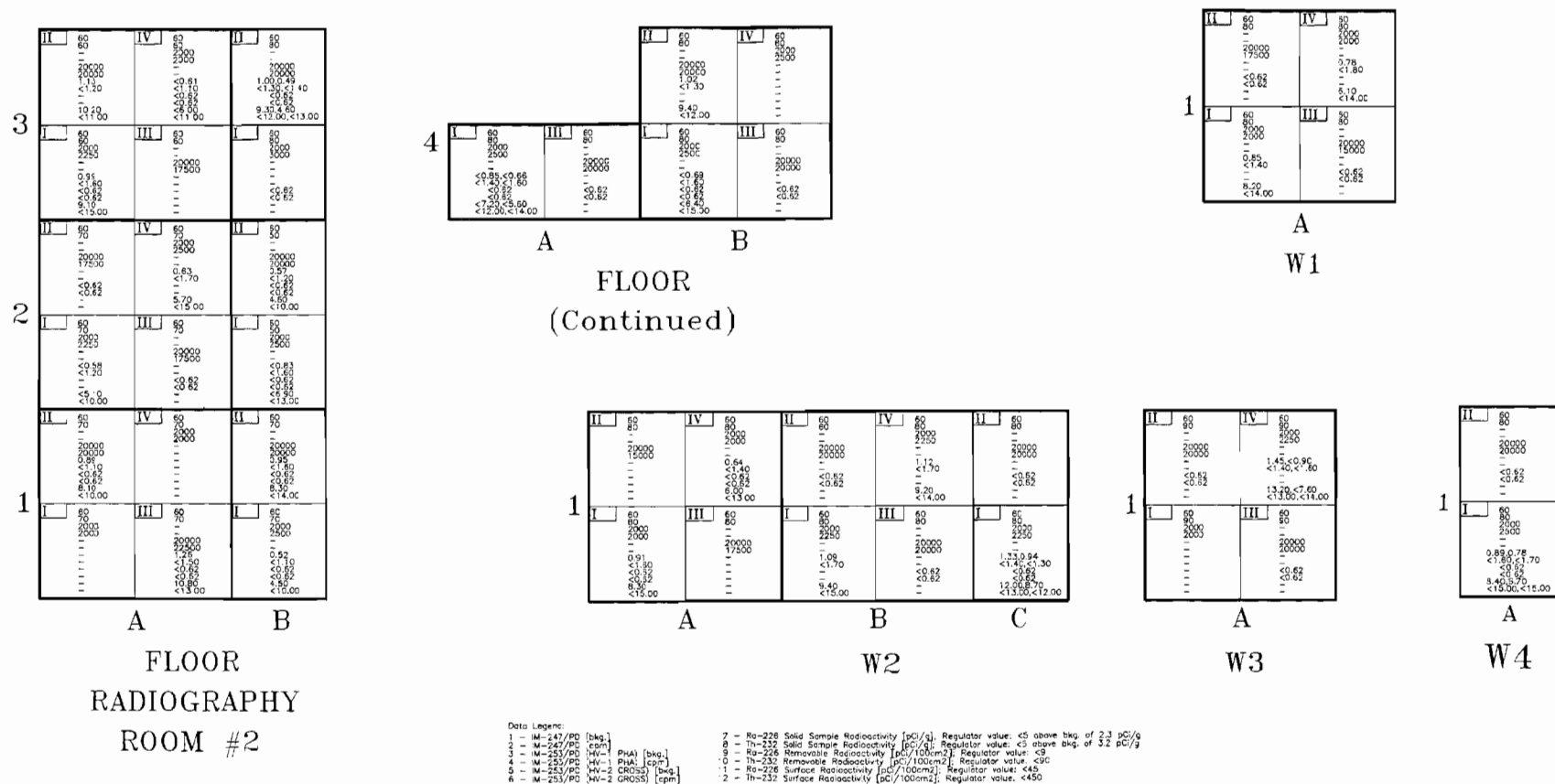
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 3 - IM-253/PD HV-1 PHA [bkg]
 4 - IM-253/PD HV-1 PHA [cpm]
 5 - IM-253/PD HV-2 GROSS [bkg]
 6 - IM-253/PD HV-2 GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <30
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <30
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <45

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

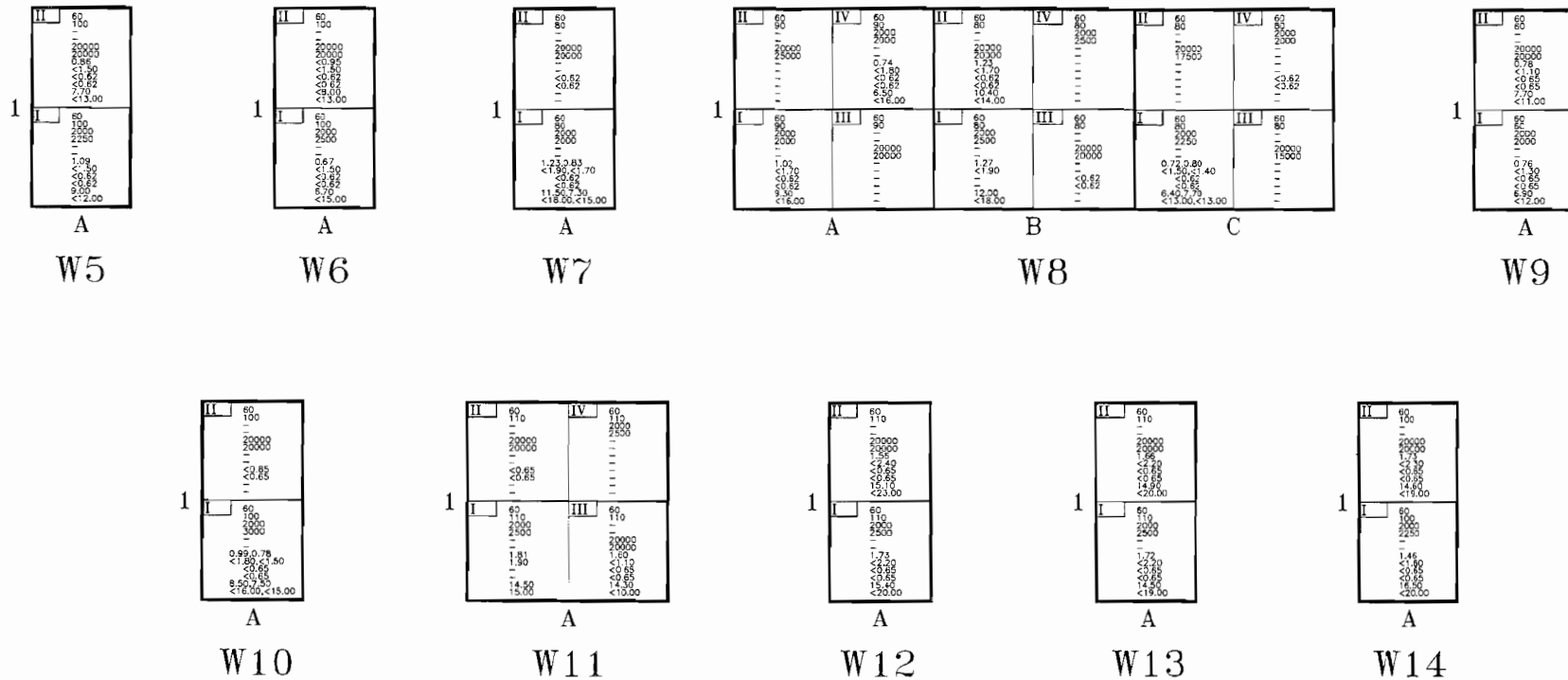
d. Localized Grid Map



CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Localized Grid Map, Radiography Room No.2



Data Legend:

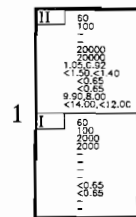
1 - W-247/PD [bkg]
 2 - W-247/PD [cpm]
 3 - W-253/PD [bkg]
 4 - W-253/PD [cpm]
 5 - W-253/PD [bkg]
 6 - W-253/PD [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

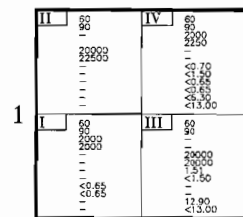
CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

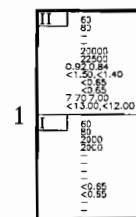
d. Localized Grid Map, Radiography Room No.2



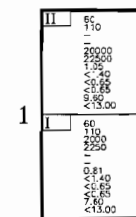
A
W15



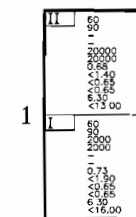
A
W16



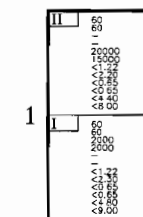
A
W17



A
W18



A
W19



A
W20

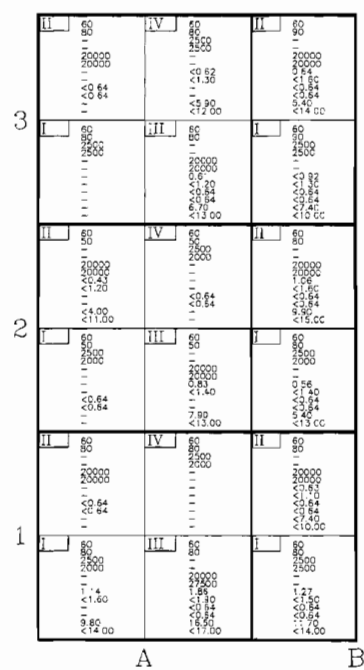
Data Legend:

1 - W-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.2 pCi/g
2 - W-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - W-253/PD (HV-1) [pA] [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - W-253/PD (HV-1) [pA] [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
5 - W-253/PD (HV-2 GROSS) [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - W-253/PD (HV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45

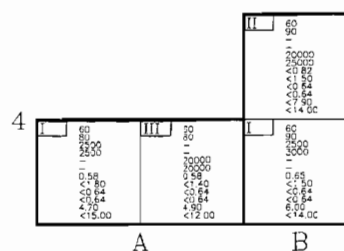
CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

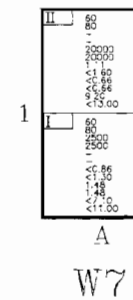
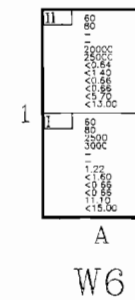
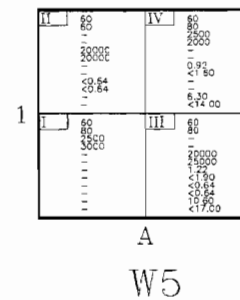
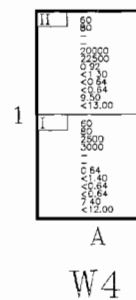
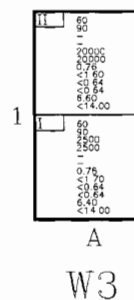
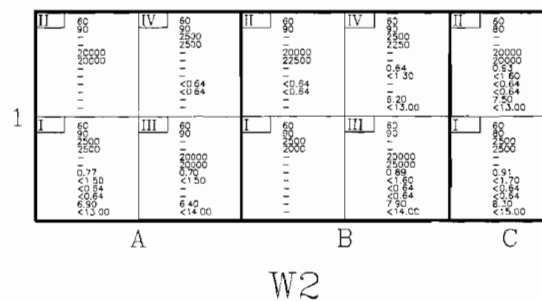
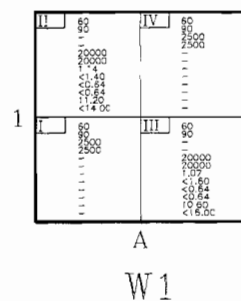
d. Localized Grid Map



FLOOR
RADIOGRAPHY
ROOM #3



FLOOR
(Continued)



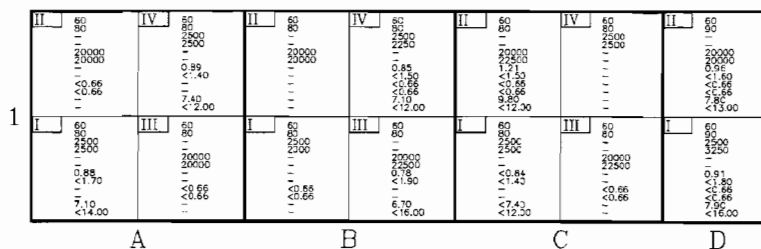
Data Legend:
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2 - M-247/PD [dpm]
3 - M-253/PD [Bq]
4 - M-253/PD [dpm]
5 - M-253/PD [Bq]
6 - M-253/PD [dpm]
7 - M-253/PD [Bq]
8 - M-253/PD [dpm]
9 - M-253/PD [Bq]
10 - M-253/PD [dpm]
11 - M-253/PD [Bq]
12 - M-253/PD [dpm]

1 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
2 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
3 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
4 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
5 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
6 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
7 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
8 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
9 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
10 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
11 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g
12 - Ru-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bag, of 2.3 pCi/g

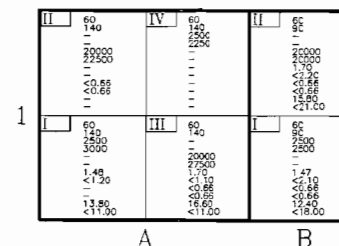
CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

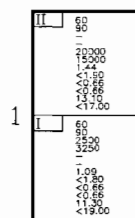
d. Localized Grid Map, Radiography Room No.3



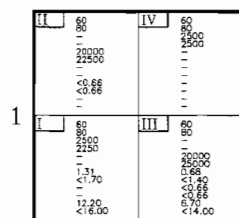
W8



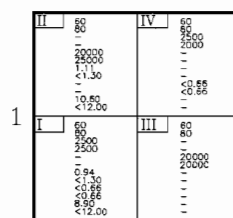
W9



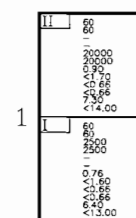
W10



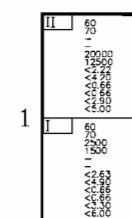
W11



W12



W13



W14

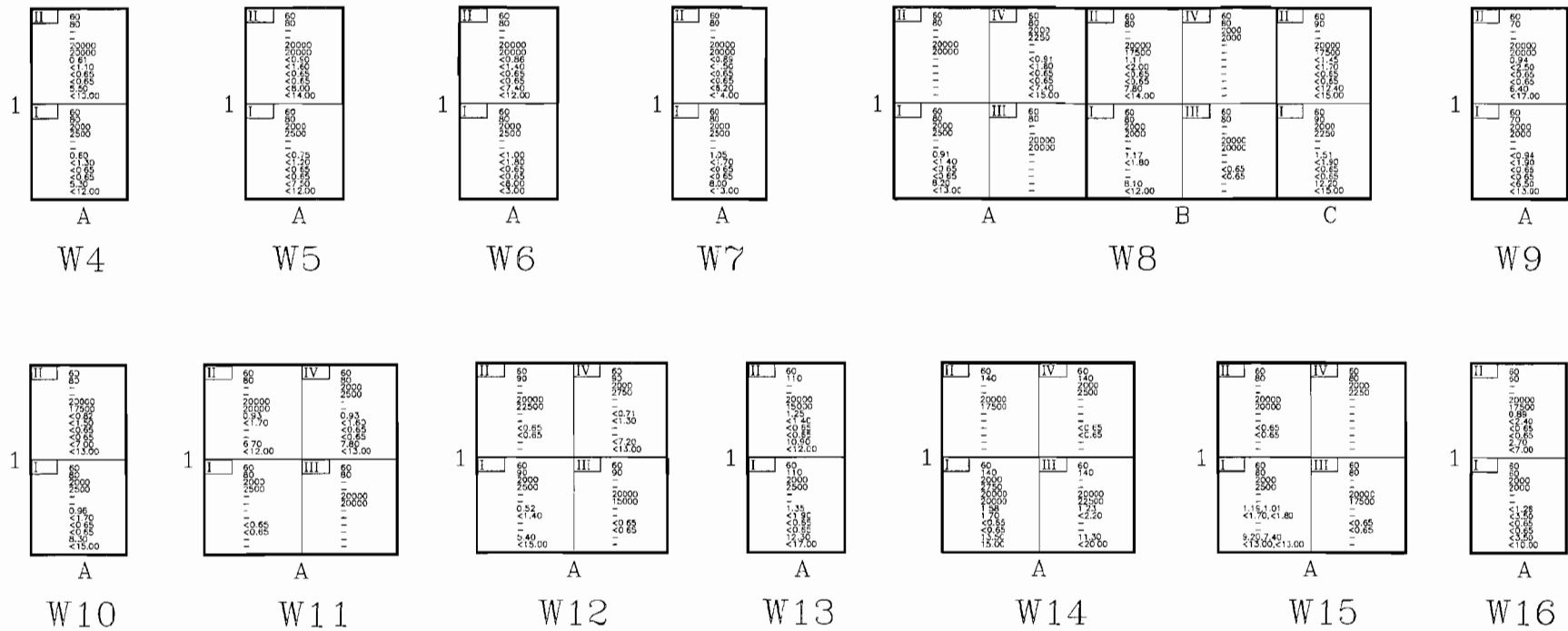
Data Legend:
 1 - IM-247/PO [bkg]
 2 - IM-247/PO [cpm]
 3 - IM-253/PO (HV-1 PHA) [bkg]
 4 - IM-253/PO (HV-1 PHA) [cpm]
 5 - IM-253/PO (HV-2 GROSS) [bkg]
 6 - IM-253/PO (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <3 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Localized Grid Map, Radiography Room No.4



Data Legend:

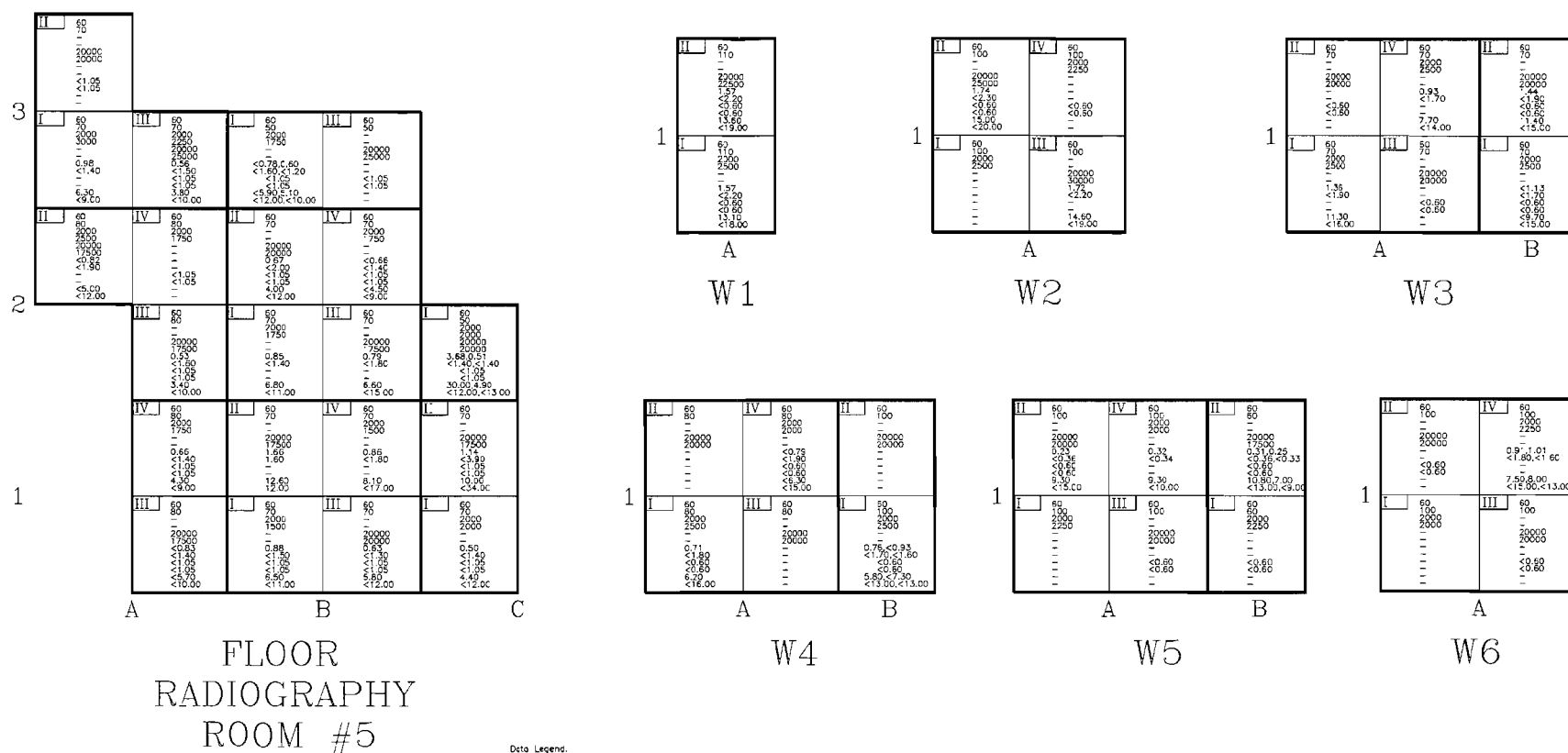
1 - IN-247/PD [d/g]
 2 - IN-247/PD [cpm]
 3 - IN-253/PD (HV-1 PMA) [bkg]
 4 - IN-253/PD (HV-1 PMA) [cpm]
 5 - IN-253/PD (HV-2 CROSS) [bkg]
 6 - IN-253/PD (HV-2 CROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [dci/g]; Regulator value: <2 above bkg. of 2.3 dci/g
 8 - Th-232 Solid Sample Radioactivity [dci/g]; Regulator value: <2 above bkg. of 3.2 dci/g
 9 - Ra-226 Removable Radioactivity [pci/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pci/100cm²]; Regulator value: <9
 11 - Ra-226 Surface Radioactivity [pci/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pci/100cm²]; Regulator value: <45

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

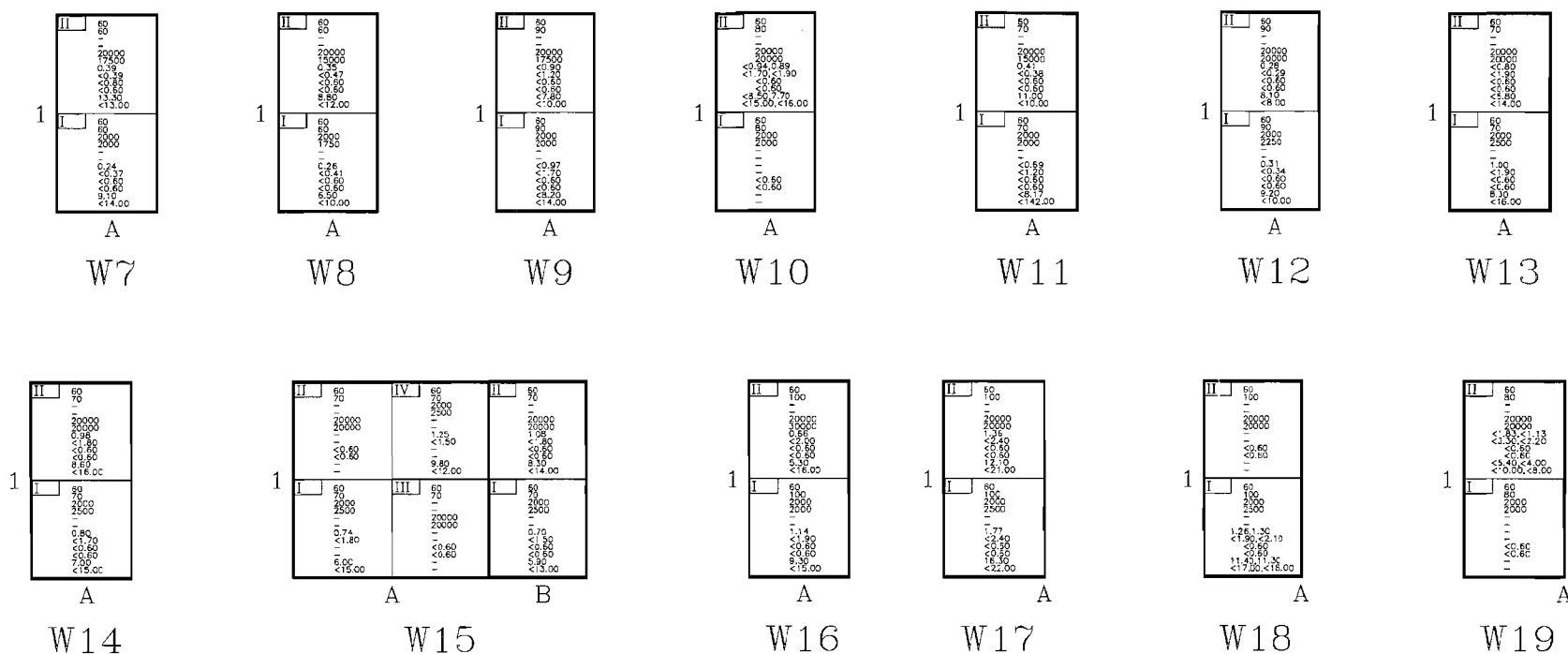
d. Localized Grid Map



CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Localized Grid Map, Radiography Room No.5



Delta Legend:

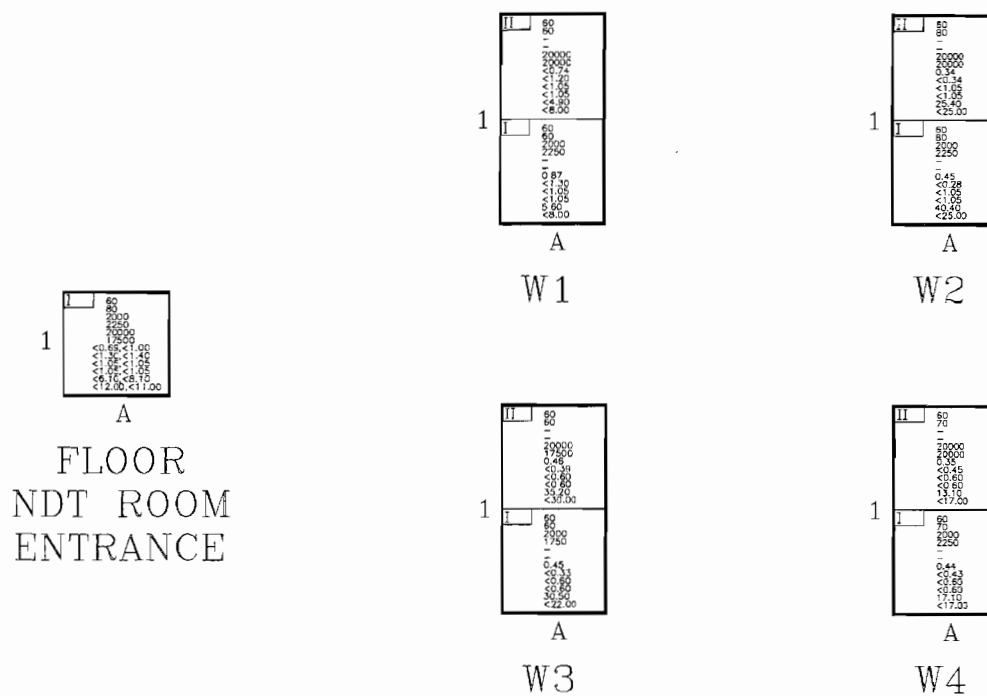
1 - IM-247/PD [bkg.]
 2 - IM-247/PD [cpm]
 3 - IM-253/PD (HV-1 PHA) [bkg.]
 4 - IM-253/PD (HV-1 PHA) [cpm]
 5 - IM-253/PD (HV-2 GROSS) [bkg.]
 6 - IM-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.2 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Localized Grid Map



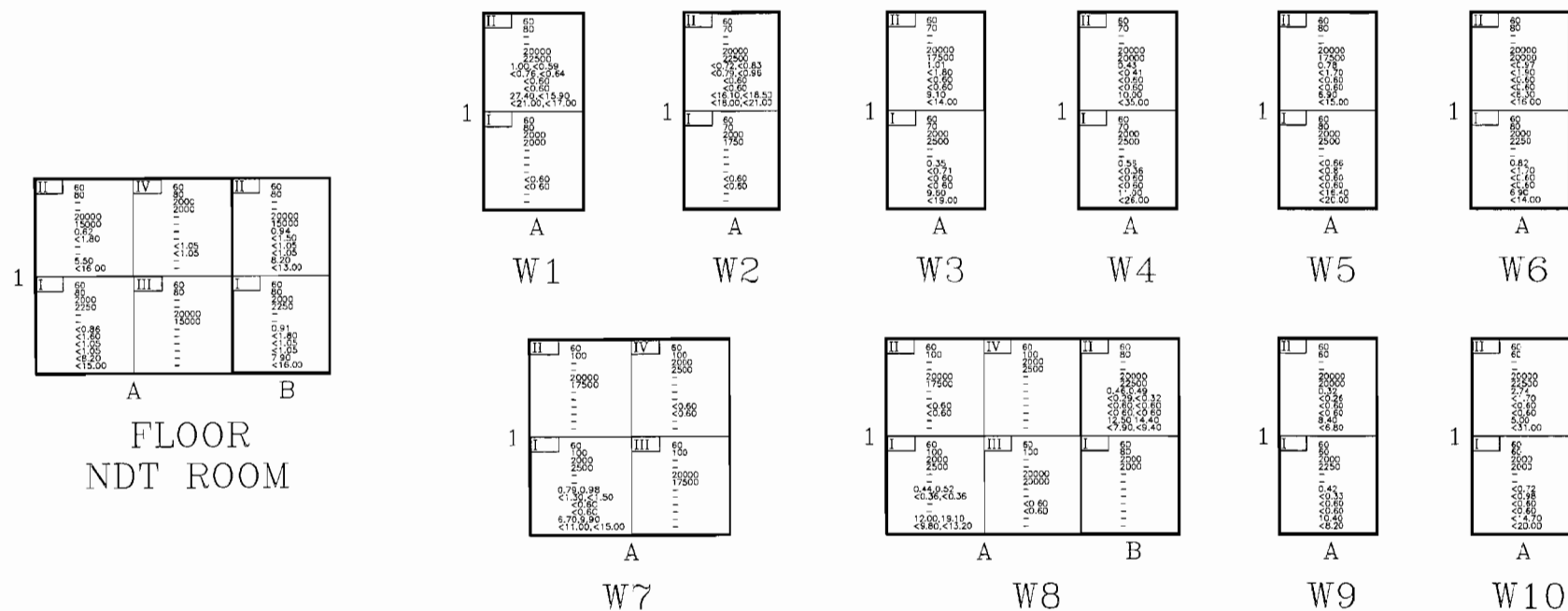
Data Legend:

- 1 - IM-247/PD [bkg]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1) [bkg]
- 4 - IM-253/PD (HV-1) [cpm]
- 5 - IM-253/PD (HV-2) [bkg]
- 6 - IM-253/PD (HV-2) [cpm]
- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Localized Grid Map



Data Legend:

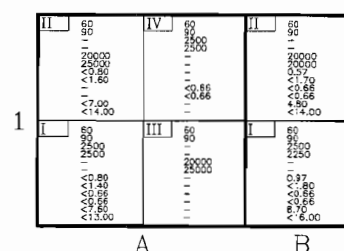
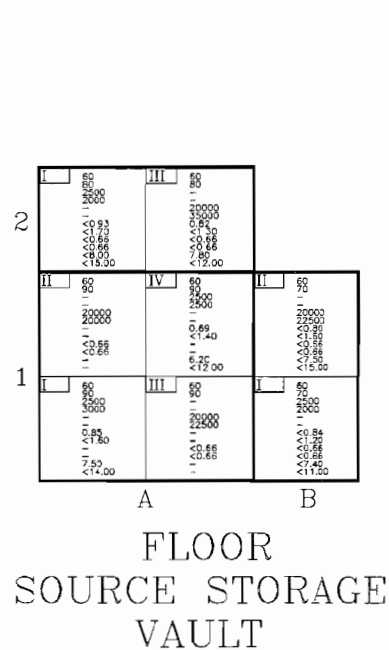
1 - IM-247/PD [bkg]
 2 - IM-247/PD [cpm]
 3 - IM-233/PD [bkg]
 4 - IM-233/PD (HV-1 PHA) [bkg]
 5 - IM-233/PD (HV-2 PHA) [cpm]
 6 - IM-233/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <5
 10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <50
 11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

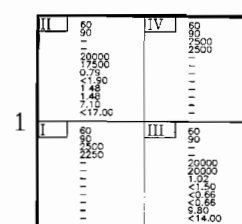
CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

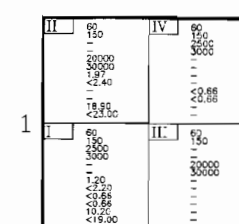
d. Localized Grid Map



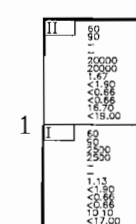
W1



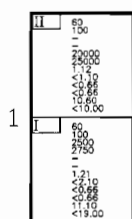
W2



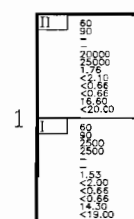
W3



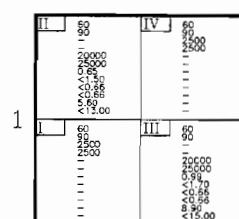
W4



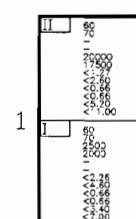
W5



W6



W7



W8

Data Legend:

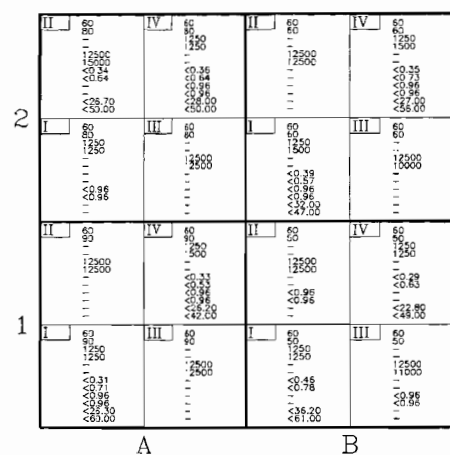
1 - IN-247/PD [bkg.]
2 - IN-247/PD [cpm]
3 - IN-253/PD HV-1 PHA [bkg.]
4 - IN-253/PD HV-1 PHA [cpm]
5 - IN-253/PD HV-2 GROSS [bkg.]
6 - IN-253/PD HV-2 GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/30cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

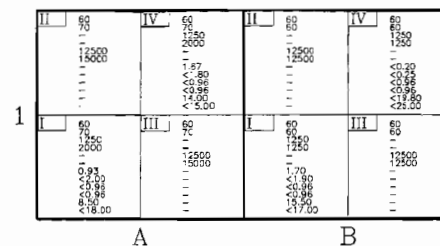
CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

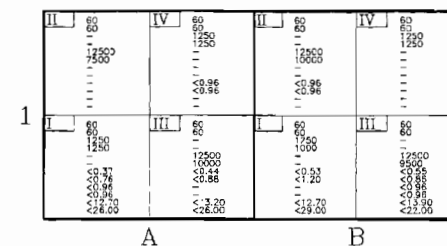
d. Localized Grid Map



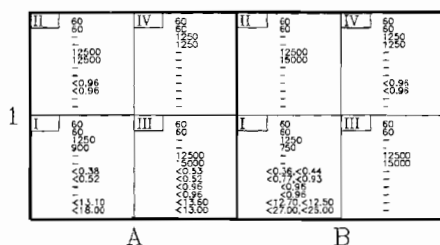
FLOOR
RADIOGRAPHY EQUIPMENT
AND SOURCE STORAGE
ROOM



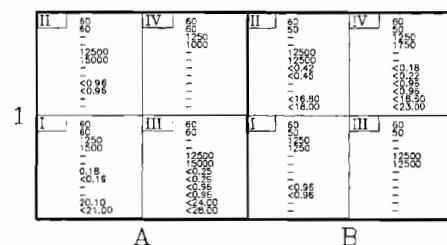
W1



W2



W3



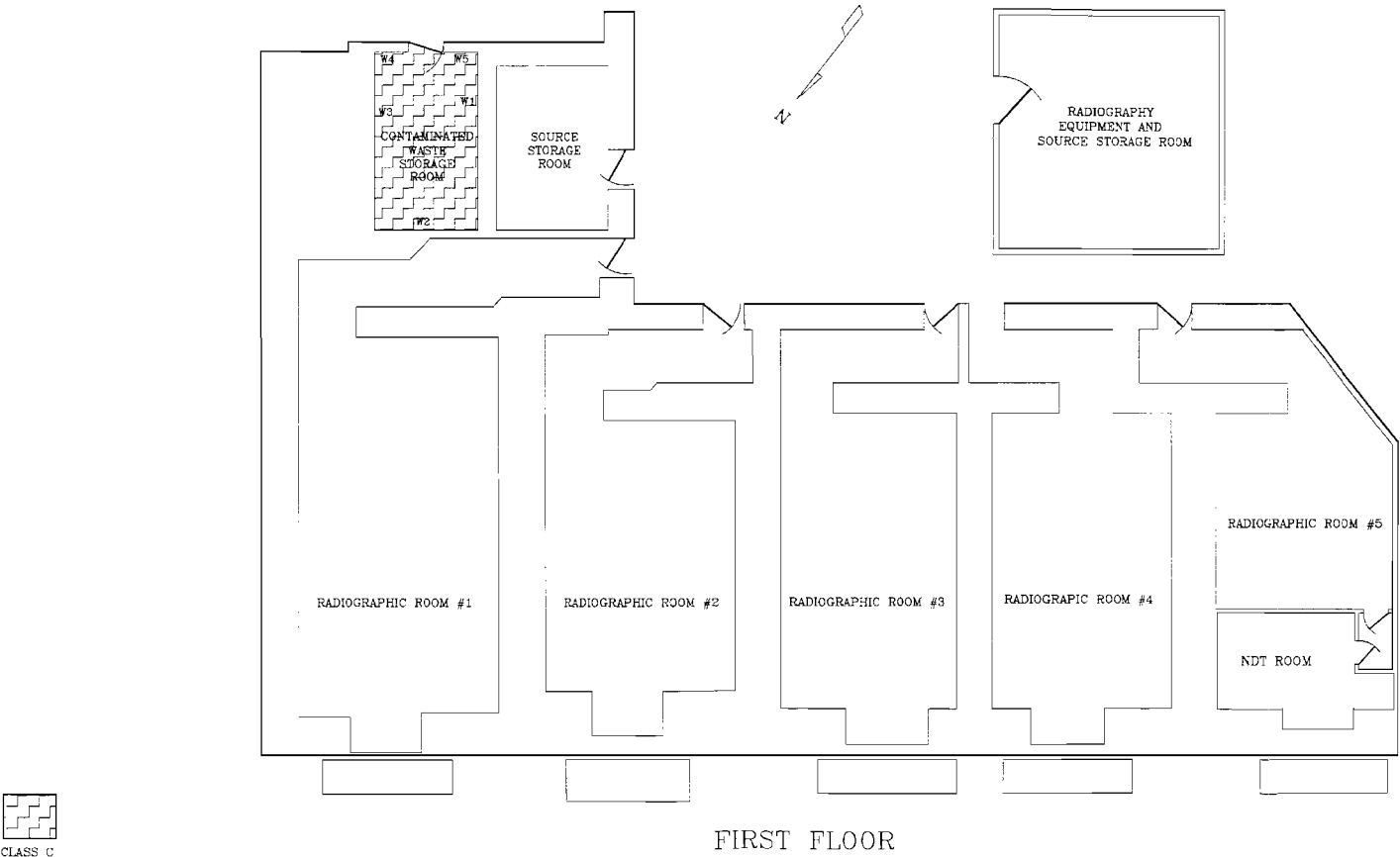
W4

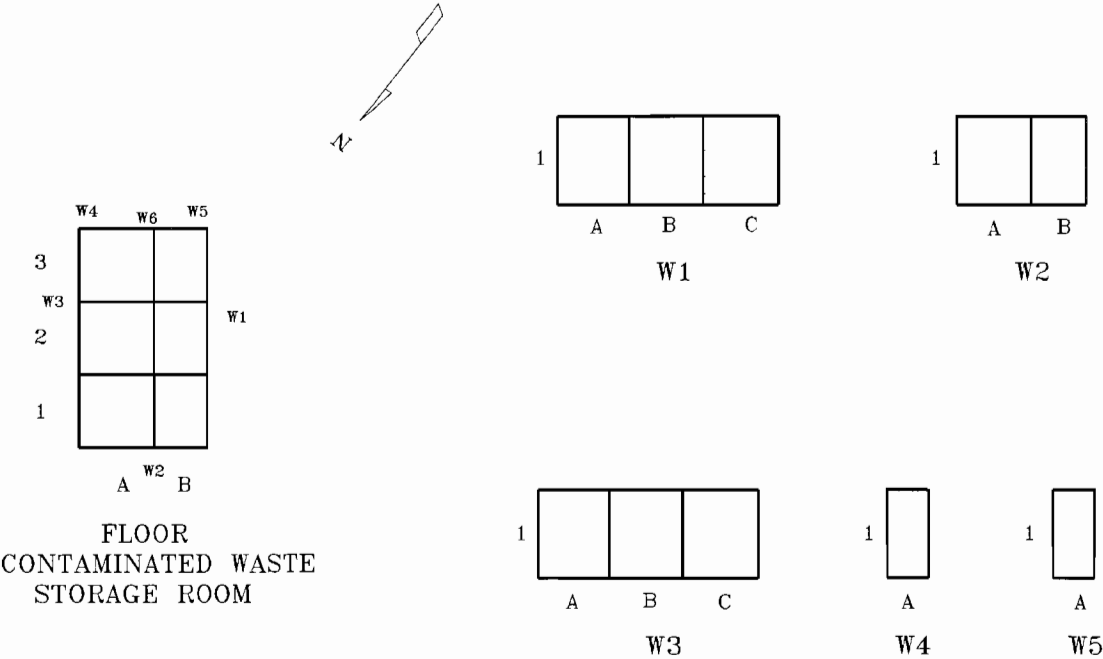
Data Legend:
1 - IM-247/PD [dkg]
2 - IM-247/PD [cpm]
3 - IM-253/PD (V-1) PHA [dkg]
4 - IM-253/PD (V-1) PHA [cpm]
5 - IM-253/PD (V-2 GROSS) [dkg]
6 - IM-253/PD (V-2 GROSS) [cpm]
7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

d. Site Map, Class C





d. Localized Grid Map

7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]: Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs



Radiographic Room No. 1, viewing northwest.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

f. Photographs



Radiographic Room No. 2, viewing northwest.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs



Radiographic Room No. 3, viewing northwest.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs



Radiographic Room No. 4, viewing northwest.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs



Radiographic Room No. 5, viewing northwest.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs

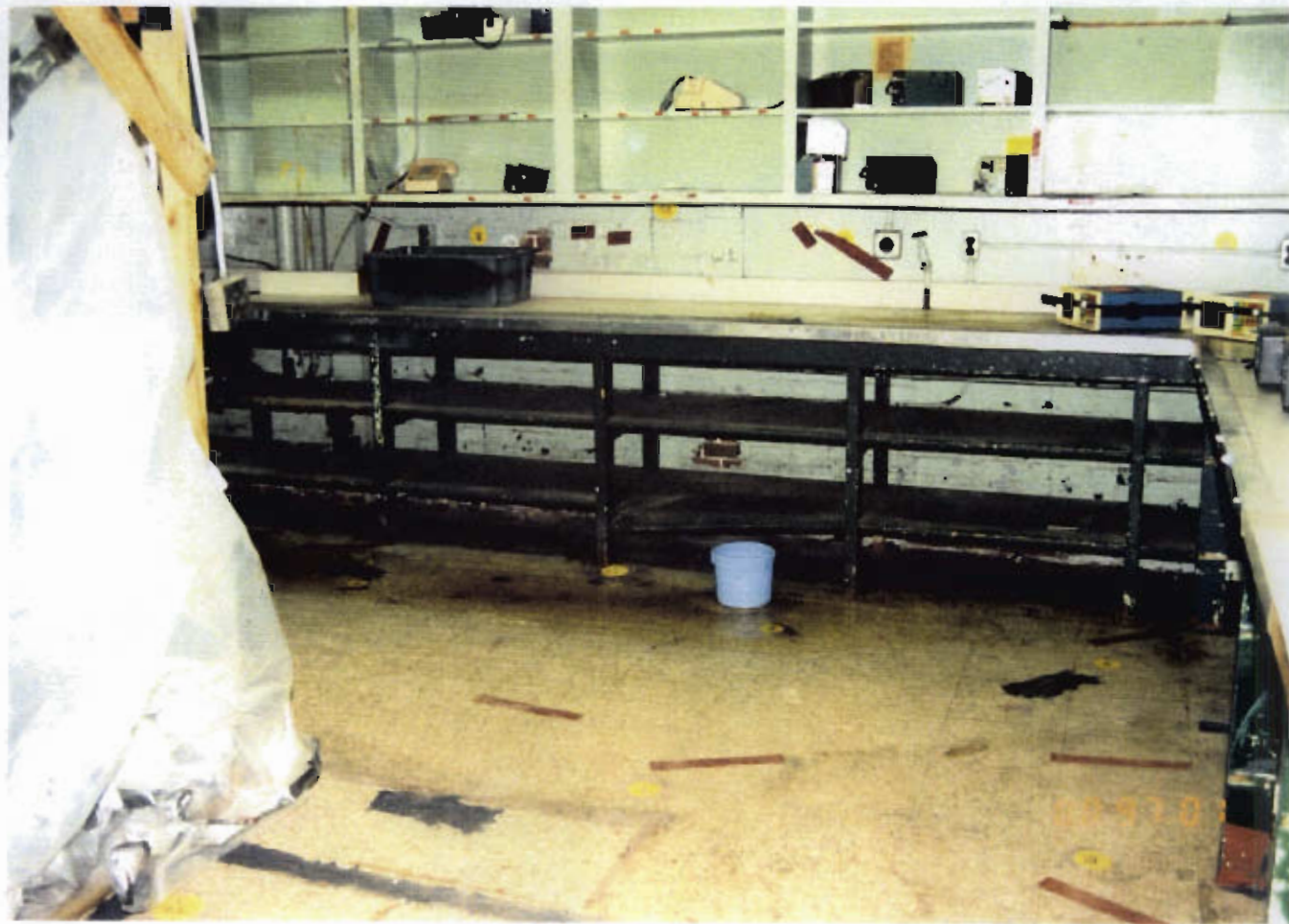


NDT Room, viewing northeast.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs



Radiography Equipment and Storage Room, viewing southwest.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs



Source Storage Vault, viewing northeast.

CNSY G-RAM FINAL REPORT

Section 5.a Building 13, First Floor

e. Photographs



Contaminated Waste Storage Room, viewing northwest.

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

a. Introduction:

Building 13 was built in 1909 originally as a clothing factory. Building 13 is located at Fifth Street and Hobson Avenue inside the Controlled Industrial Area.

(1) Description:

Building 13 is a three level structure of rectangular plan. Wall construction is of red brick. There are two connected additions, one constructed of brick, the other of concrete.

(2) Brief History:

(a) **Use:** Building 13 housed nuclear and non-nuclear Quality Assurance, Non-destructive Testing, and Chemistry Division for CNSY. Building 13 second floor has three areas that received a G-RAM release survey.

(b) **Radiological History:** Room 205, on the second floor, was a work area for gas chromatography, which utilized sources. On the second floor of the annex to Building 13 is the former and present locations of the X-ray Room.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

For the Class A survey, the floors of Rooms 205 and the Former and Present X-ray Rooms each consisted of one grid with a maximum size of 20' by 20'. Each of these grids were subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 13, second floor were determined from similar materials in Building M1123.

c. Summary:

Surveys performed in the Class A areas with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.64 pCi/100 cm² to a high of less than 0.93 pCi/100 cm².

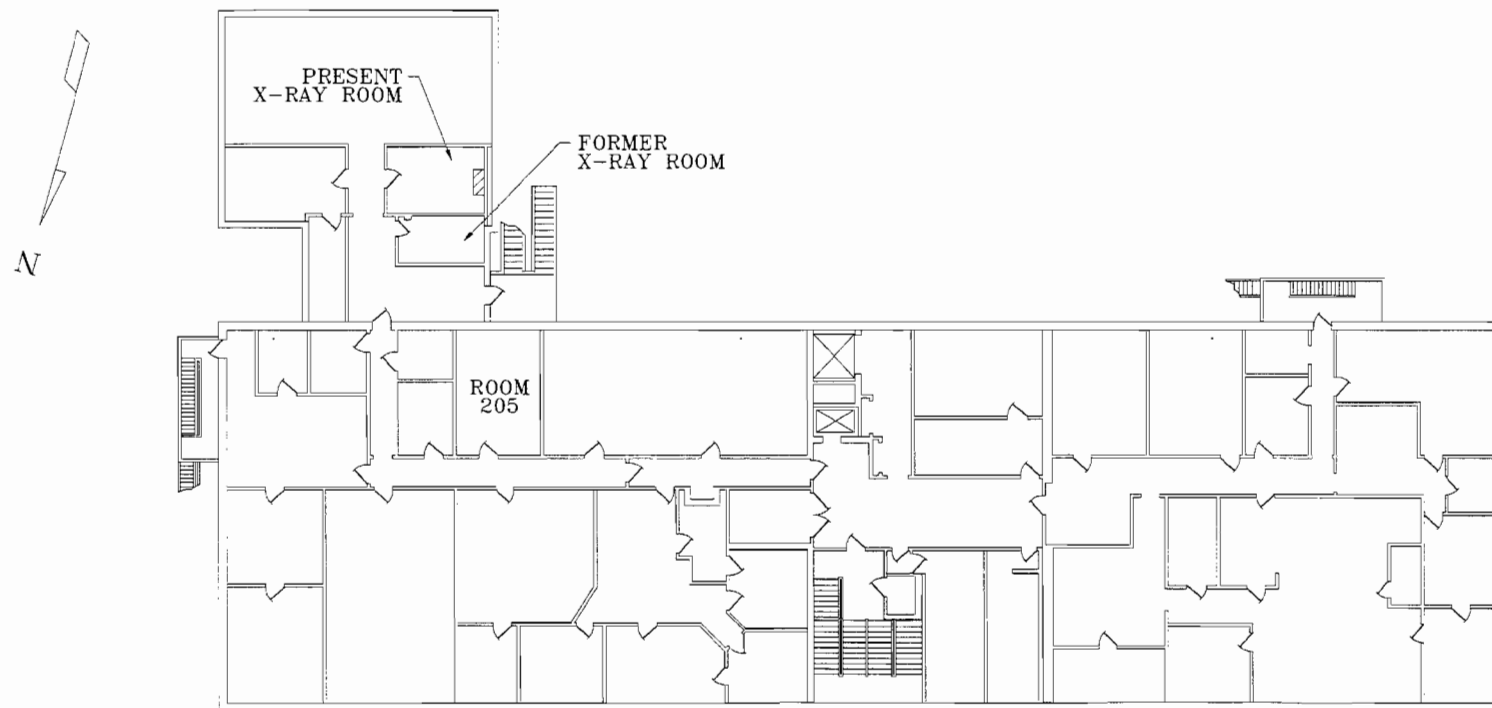
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of less than 0.29 pCi/g to a high of 0.38 pCi/g and Th-232 solid material samples ranged from a low of less than 0.58 pCi/g to a high of less than 0.79 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 18.80 pCi/100 cm² to a high of 32.70 pCi/100 cm² and the Th-232 levels ranged from a low of less than 44.00 pCi/100 cm² to a high of less than 51.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

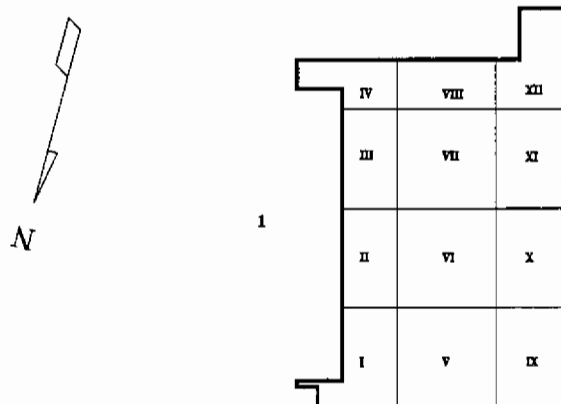
d. Site Map



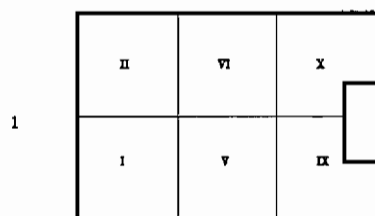
CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

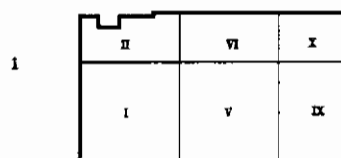
e. Overall Grid Map



RADIOCHEMISTRY LAB/SUPPORT ROOM (RM 205)

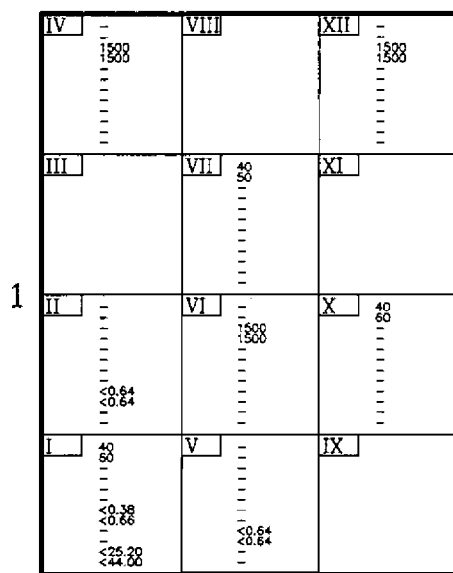


PRESENT X-RAY ROOM



FORMER X-RAY ROOM

e. Localized Grid Map



A

ROOM 205
FLOOR

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:

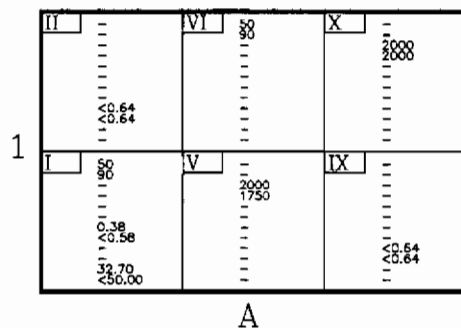
1	-	IM-247/PD	{bkg.}	
2	-	IM-247/PD	{cpm}	
3	-	IM-253/PD	{HV-1 PHA}	{bkg.}
4	-	IM-253/PD	{HV-1 PHA}	{cpm}
5	-	IM-253/PD	{HV-2 GROSS}	{bkg.}
6	-	IM-253/PD	{HV-2 GROSS}	{cpm}

7	- Ra-226	Solid Sample Radioactivity [pCi/g]:	Regulator value: <5	above bkg. of 2.3 pCi/g
8	- Th-232	Solid Sample Radioactivity [pCi/g]:	Regulator value: <5	above bkg. of 3.2 pCi/g
9	- Ra-226	Removable Radioactivity [pCi/100cm ²]:	Regulator value: <9	
10	- Th-232	Removable Radioactivity [pCi/100cm ²]:	Regulator value: <90	
11	- Ra-226	Surface Radioactivity [pCi/100cm ²]:	Regulator value: <45	
12	- Th-232	Surface Radioactivity [pCi/100cm ²]:	Regulator value: <450	

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

e. Localized Grid Map



FORMER X-RAY ROOM FLOOR

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

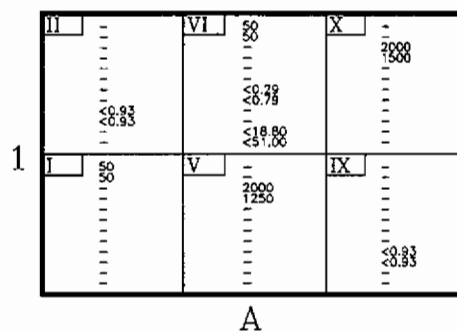
Data Legend:

1 - IM-247/PD [bkg.]	7 - Rn-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PD (HV-1 PHA) [bkg.]	9 - Rn-226 Removable Radioactivity [pCi/100cm2]; Regulator value: <9
4 - IM-253/PD (HV-1 PHA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm2]; Regulator value: <90
5 - IM-253/PD (HV-2 GROSS) [bkg.]	11 - Rn-226 Surface Radioactivity [pCi/100cm2]; Regulator value: <45
6 - IM-253/PD (HV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm2]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

e. Localized Grid Map



PRESENT X-RAY ROOM FLOOR

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:

- 1 - IM-247/PD [bkg.]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [bkg.]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [bkg.]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]

- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

f. Photographs



Radiochemistry Lab/Support Room 205, viewing south.

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

f. Photographs



Present X-ray Room, viewing east.

CNSY G-RAM FINAL REPORT

Section 5.b Building 13, Second Floor

f. Photographs



Former X-ray Room, viewing east.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

a. Introduction:

Building 13 was built in 1909, as a clothing factory. Building 13 is located at Fifth Street and Hobson Avenue in the Controlled Industrial Area.

(1) Description:

Building 13 is a three level structure of rectangular plan. Wall construction is of red brick. There are two connected additions, one constructed of brick, the other of concrete.

(2) Brief History:

(a) **Use:** Building 13 housed nuclear and non-nuclear Quality Assurance, Non-destructive Testing and Chemistry Division for CNSY.

(b) **Radiological History:** Building 13 third floor, has numerous areas that received a G-RAM release survey. The following rooms received a Class B survey: Rooms 301, 301A - 301E, 302, 303, 303A, 303B, 304, Eastside Hall, Ladies' Room, and Men's Room. The following rooms received a Class C survey: Rooms 305, 306, 306A-306C, 307 and the Westside Hall.

On the third floor of Building 13 Annex the Counting Room received a Class B survey.

(3) Survey Requirements:

- (a) Class B release survey.
- (b) Class C release survey.

b. Discussion:

Class B:

For the Class B survey areas, the floors were divided into a total of 99 grids with a maximum size of 10' by 10'. Each of these grids were subdivided into sub-grids with an approximate size of 5' by 5'.

The walls were horizontally divided into 68 grids with a maximum size of 6' high and 10' wide. Each of these wall grids were subdivided into sub-grids with an approximate size of 3' high by 5' wide.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

the grid surface.

No IM-247/PD surveys were performed on floors in Rooms 301, 301A, 301B, 301C, 301D and 301E. The flooring in these rooms were covered with new flooring material following Hurricane Hugo in 1989. Survey of these floors with an IM-247/PD would not provide meaningful data.

No surveys were performed of the Room 302 walls, the contiguous stairwell and connecting hallway walls, and the elevators as these were open, non-work areas.

The interior walls of Rooms 301A, 301B, 301C, 301D, 301E, and 304 which were not surveyed because they were installed after G-RAM work was performed in this building.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of two solid material samples were taken from each grid, except for areas with new construction flooring where one core sample was utilized for each floor grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Class C:

For the Class C survey areas, the floors were divided into 181 grids with a maximum size of 5' by 5'.

The walls were horizontally divided into 53 grids with a maximum size of 6' high and 5' wide.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface.

A narrow gamma energy range scintillation scan survey with the IM-253/PD

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

(PHA mode) was performed over 100% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over 100% of the grid surface.

A minimum of one swipe/smear was taken in each grid.

A minimum of 25% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 13 were determined from similar materials in Building 32 Power House.

c. Summary:

Class B Summary:

Solid material samples from portions of grids in the Rooms 301 and 303 were found to be in excess of allowable limits.

The area remediated in Room 301, Building 13 was as follows: the area was approximately 430 sq. ft. The grids affected were floor grids G13-301-F-G1, G13-301-F-G2, G13-301-F-H1, and G13-301-F-H2. In these areas 1-1/2" of tongue and groove flooring, 1-1/4" of tongue and groove flooring, 1/2" sheet of plywood and two layers of flooring tile were removed by sawing and prying. The material was removed and disposed of as General Radioactive Material waste. The maximum activity found in a solid sample was 30.34 pCi/g, the average was less than 1.47 pCi/g. No removable radioactivity was encountered.

The area remediated in Room 303, Building 13 was as follows: the area was approximately 170 sq. ft. The grids affected were floor grids G13-303-F-B1, G13-303-F-B2, and G13-303-F-B3. In these areas 1-1/2" of tongue and groove flooring, 1-1/4" of tongue and groove flooring, 1/2" sheet of plywood, and two layers of flooring tile were removed by sawing and prying. The material was removed and disposed of as General Radioactive Material waste. The maximum activity found in a solid sample was approximately 600.00 pCi/g, the average was less than 0.69 pCi/g. No removable radioactivity was encountered.

Remediation was performed on these areas and the post remediation results are summerized below on the localized grid maps.

Surveys performed in the Class B areas with the IM-247/PD did not detect any

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect any areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than 9 pCi/100 cm² and removable Th-232 levels were less than 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.45 pCi/100 cm² to a high of 2.28 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than 5 pCi/g above background. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.12 pCi/g to a high of 4.95 pCi/g and Th-232 solid material samples ranged from a low of less than 0.16 pCi/g to a high of less than 4.00 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 2.30 pCi/100 cm² to a high of less than 44.60 pCi/100 cm² and the Th-232 levels ranged from a low of less than 2.50 pCi/100 cm² to a high of less than 113.00 pCi/100 cm².

Class C Summary:

Solid material samples from portions of grids in Rooms 305, 306A, and 307 were found to be in excess of allowable limits.

The area remediated in Room 305, Building 13 was as follows: the area was approximately 100 sq. ft. The grids affected were wall grids G13-305-W-1-B1, G13-305-W-1-C1, G13-305-W-1-D1, G13-305-W-1-E1, G13-305-W-1-F1 and floor grid G13-305-F-F4. In the wall areas, brick mortar, brick and paint were removed by mechanical means and the material was disposed of as General Radioactive Material waste. In the floor areas 1/2" of concrete was removed by mechanical means and 1-1/2" tongue and groove wood was removed by sawing and prying. The maximum activity found in a solid sample was approximately 86.40 pCi/g, the average was less than 11.40 pCi/g. No removable radioactivity was encountered.

The area remediated in Room 306A was as follows: the area was approximately two sq. ft. The grid affected was floor grid G13-306A-F-A3. In

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

this area, 1-1/2" tongue and groove wood, 1/2" plywood and floor tile were removed by sawing and prying. The material was removed and disposed of as General Radioactive Material waste. While the solid sample activity measured in pCi/g was less than the limit, the calculated surface activity for the sample of 69.30 pCi/100cm² exceeded the surface activity limit of 45 pCi/100cm². No removable radioactivity was encountered.

The area remediated in Room 307 was as follows: the area was approximately 24 sq. ft. The grids affected were floor grid G13-307-F-B12 and wall grid G13-307-W2-A1. In the floor area 1/2" of concrete was removed by mechanical means and 1-1/2" tongue and groove wood and 1/2" plywood were removed by sawing and prying. The material was removed and disposed of as General Radioactive Material waste. The maximum activity found in a solid sample was 6.67 pCi/g, the average was 3.12 pCi/g. No removable radioactivity was encountered.

Remediation was performed on these areas and the post remediation results are summarized below and on the localized grid maps.

Surveys performed in the Class C areas with the IM-247/PD detected four areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The alpha/beta analyzer results indicated removable Ra-226 and Th-232 levels ranged from a low of less than 0.49 pCi/100 cm² to a high of 1.75 pCi/100 cm².

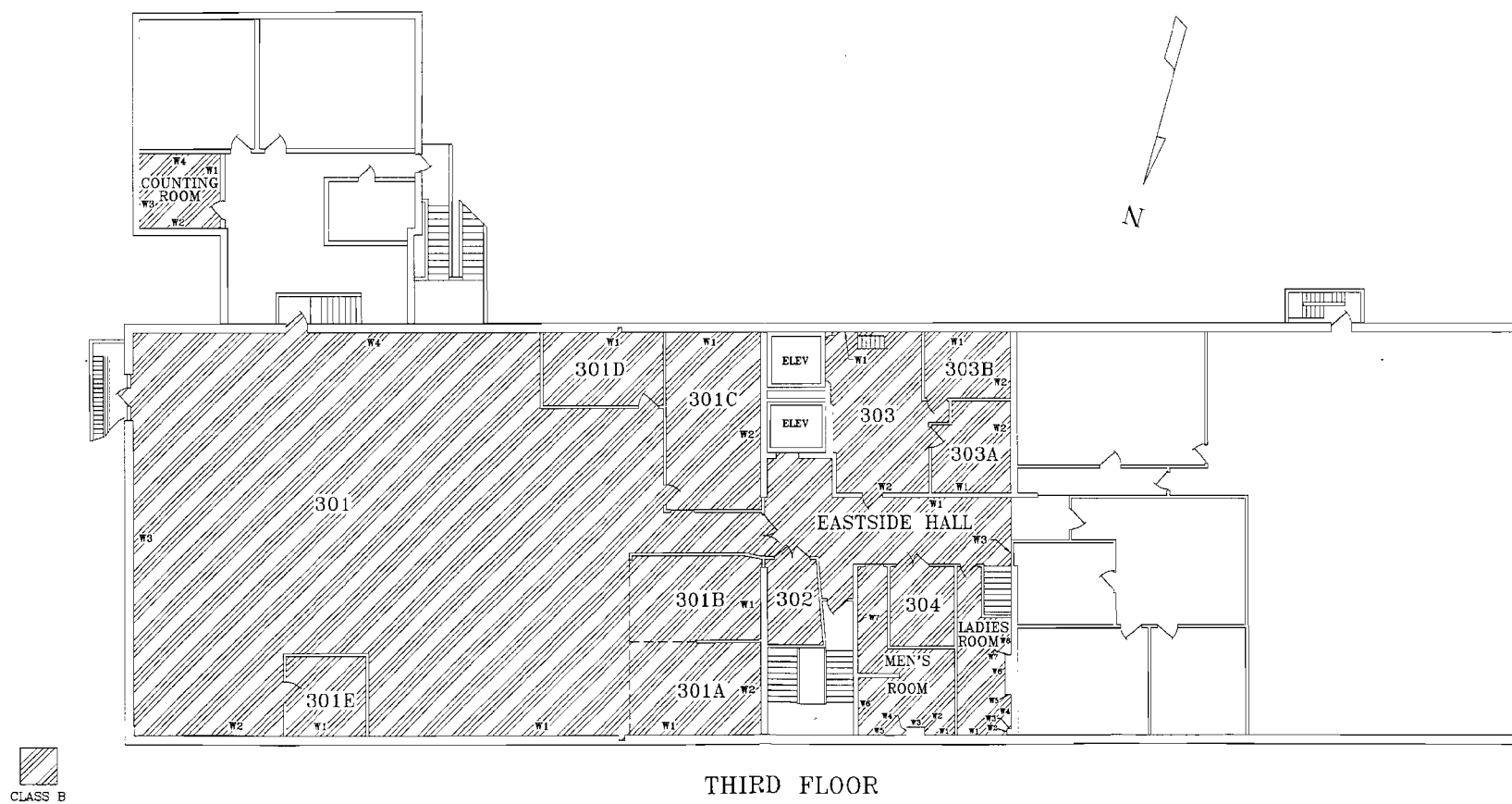
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than 5 pCi/g above background. MCA analysis performed on Ra-226 ranged from a low of less than 0.22 pCi/g to a high of 4.04 pCi/g and Th-232 ranged from a low of less than 0.22 pCi/g to a high of less than 3.00 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed results indicated Ra-226 levels ranged from a low of 3.50 pCi/100 cm² to a high of 44.90 pCi/100 cm² and the Th-232 levels ranged from a low of less than 10.30 pCi/100 cm² to a high of less than 113.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

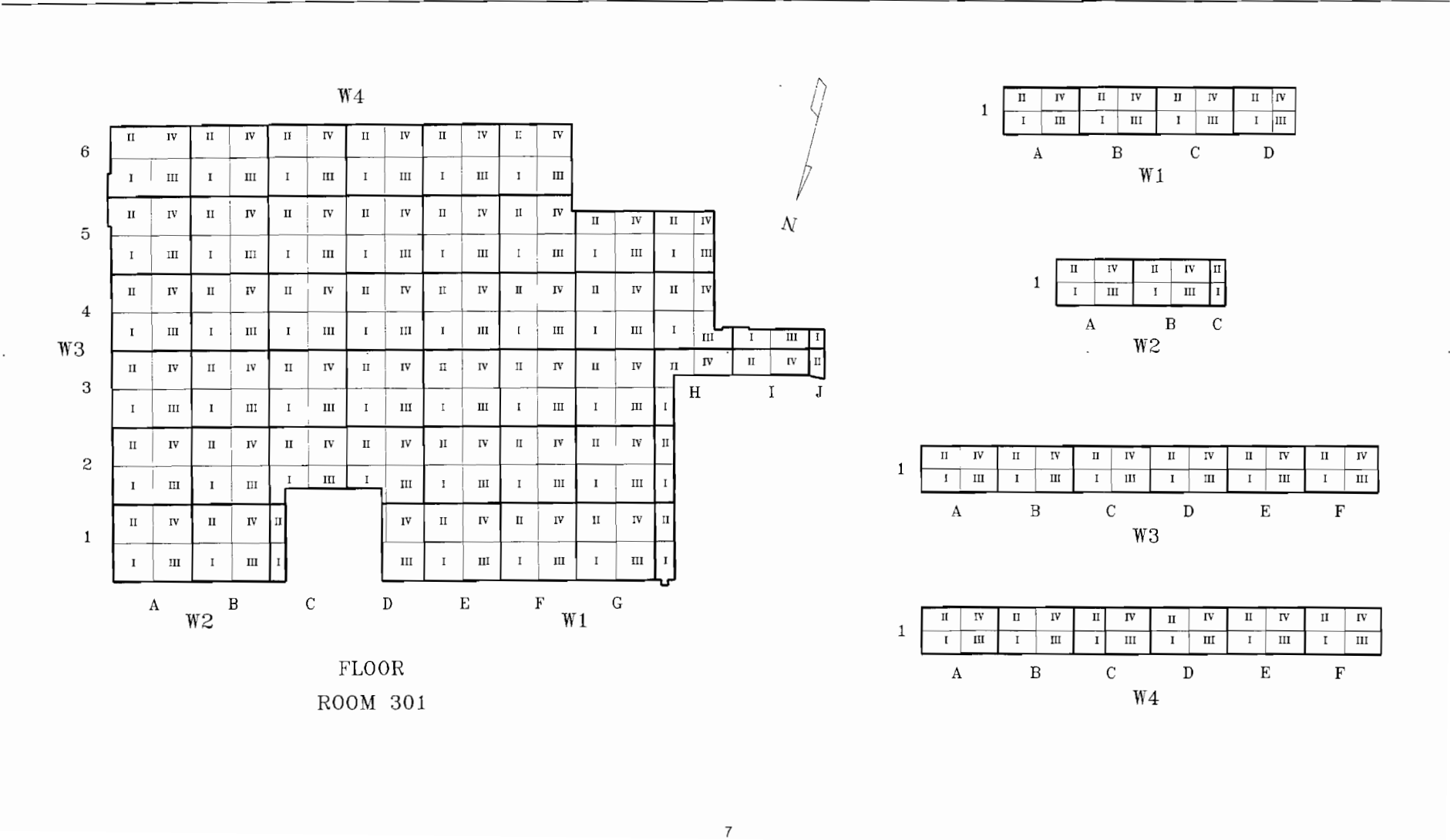
d. Site Map, Class B



CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

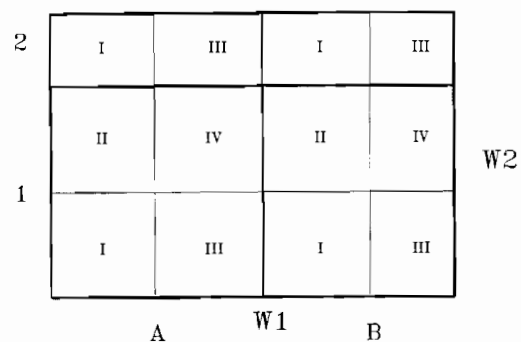
d. Overall Grid Map, Class B



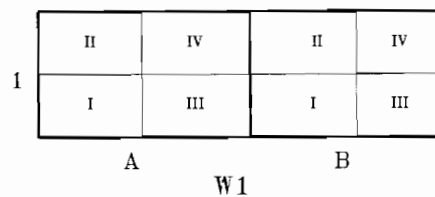
CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

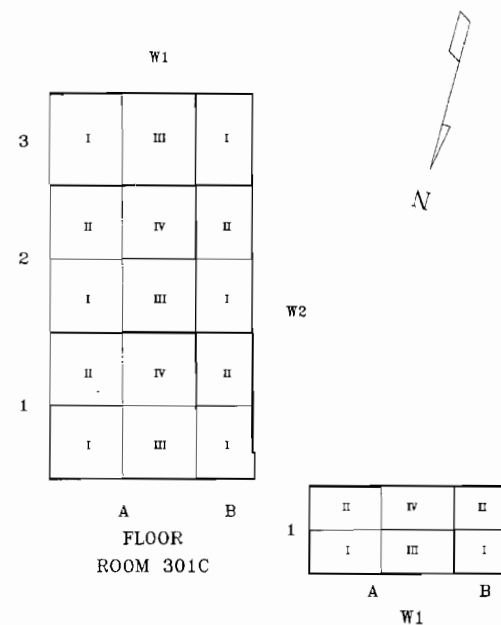
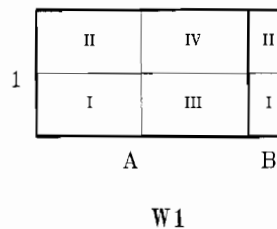
d. Overall Grid Map, Class B



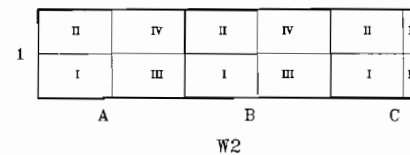
FLOOR
ROOM 301A



FLOOR
ROOM 301B



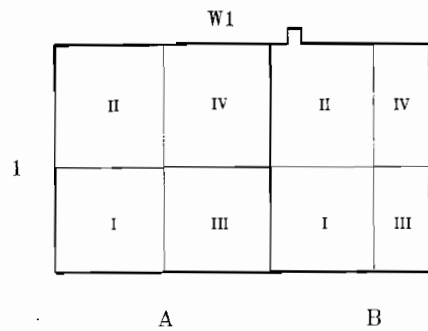
FLOOR
ROOM 301C



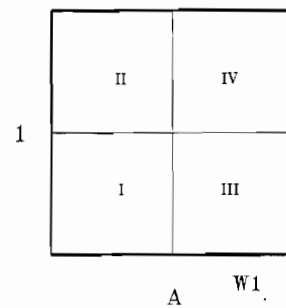
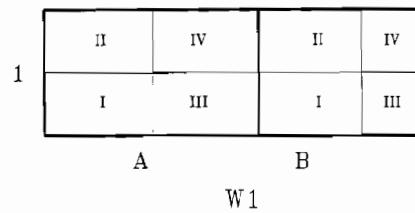
CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

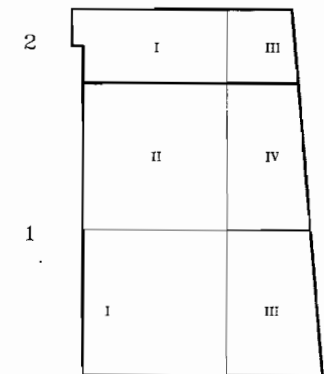
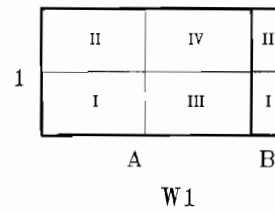
d. Overall Grid Map, Class B



FLOOR
ROOM 301D



FLOOR
ROOM 301E

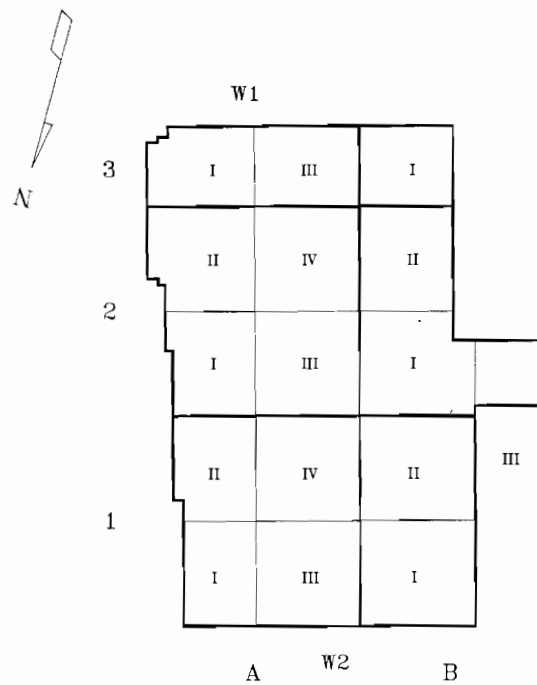


FLOOR
ROOM 302

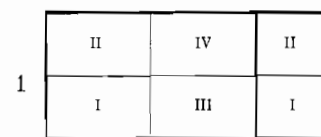
CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

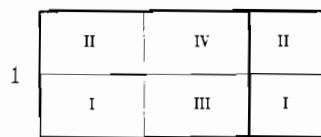
d. Overall Grid Map, Class B



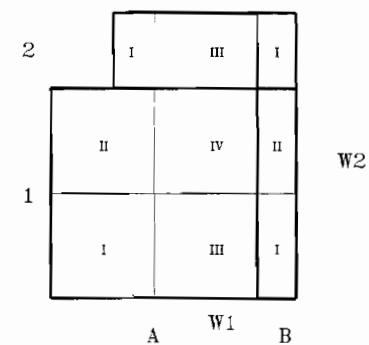
FLOOR
ROOM 303



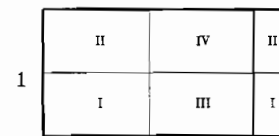
W1



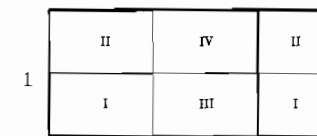
W2



FLOOR
ROOM 303A



W1

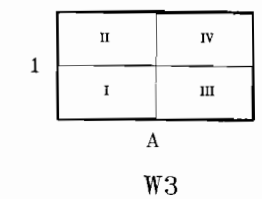
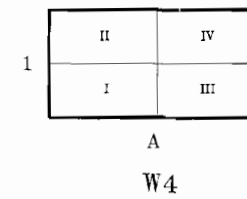
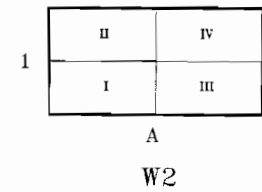
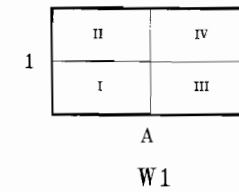
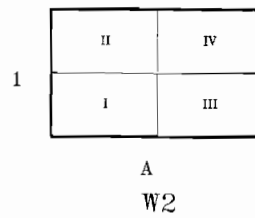
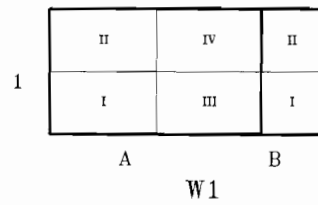
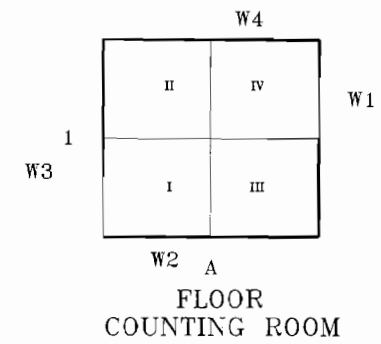
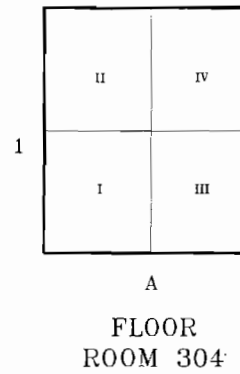
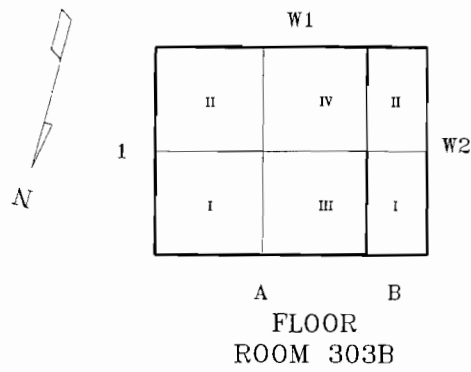


W2

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

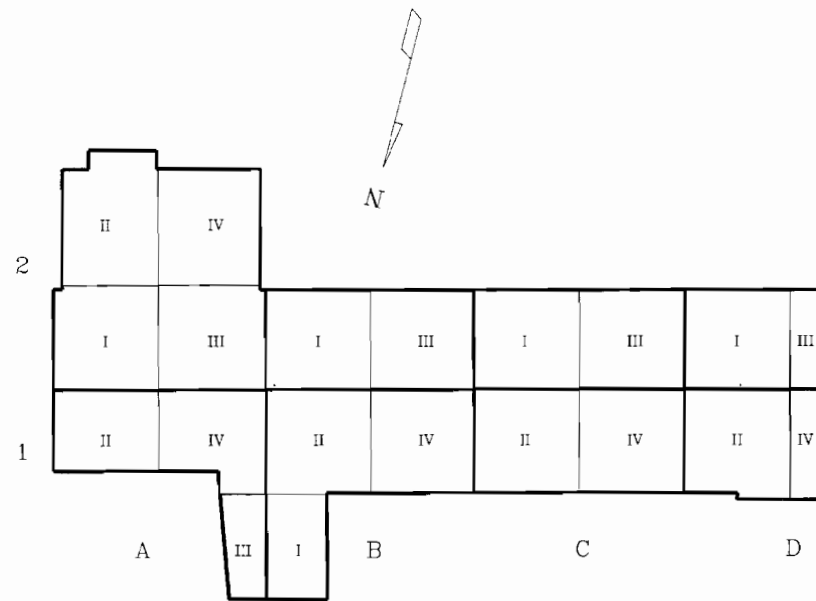
d. Overall Grid Map, Class B



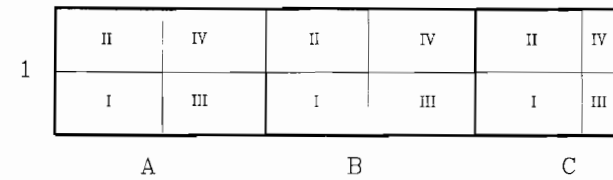
CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

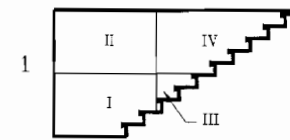
e. Overall Grid Map



FLOOR
EASTSIDE HALL



W1



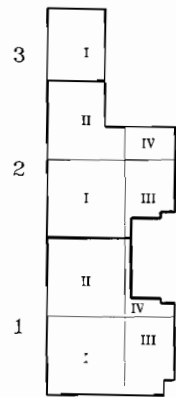
A

W3

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

d. Overall Grid Map, Class B

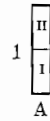


A

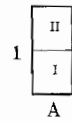
FLOOR
LADIES ROOM



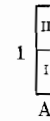
W1



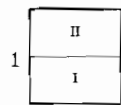
W2



W3



W4



A

W6



A

B

W7

d. Localized Grid Map



d. Localized Grid Map

15

e. **Localized Grid Map**

d. **Localized Grid Map, Room 301**

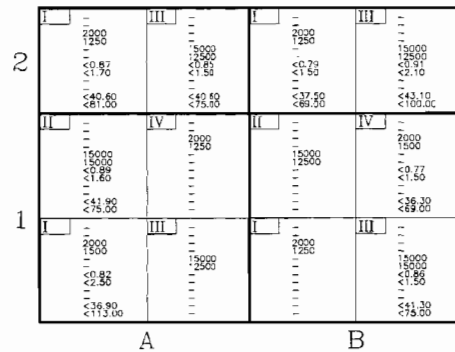


Data Legend:						
1	IN-2147/PD	[kg]	7	Re-226 Solid Sample Radioactivity	[pCi/g]	Regulator value: <5 above bkg. of 2.3 pCi/g
2	IN-2147/PD	[kg]	8	Th-232 Solid Sample Radioactivity	[pCi/g]	Regulator value: <5 above bkg. of 3.7 pCi/g
3	IN-2633/PD	(H+ PhA) [kg]	9	Re-226 Removable Radioactivity	[pCi/100cm2]	Regulator value: <9
4	IN-2633/PD	(H+ PhA) [cpm]	10	Th-232 Removable Radioactivity	[pCi/100cm2]	Regulator value: <50
5	IN-2633/PD	(H+ PhA) [cpm]	11	Surface Radioactivity	[pCi/100cm2]	Regulator value: <450
6	IN-2633/PD	(H+ PhA) [cpm]	12	Th-232 Surface Radioactivity	[pCi/100cm2]	Regulator value: <450
7	IN-2633/PD	(H+ PhA) [cpm]				

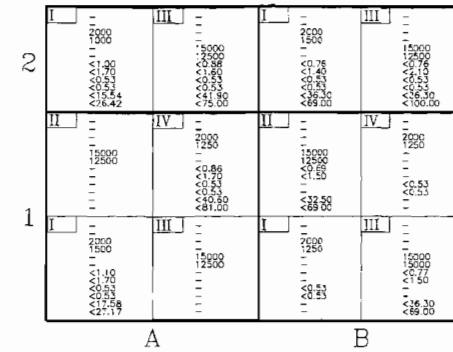
CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

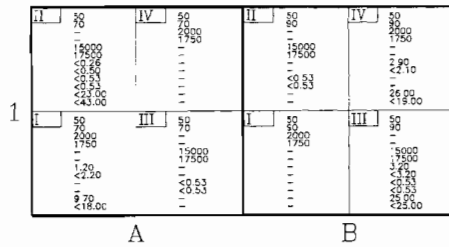
d. Localized Grid Map



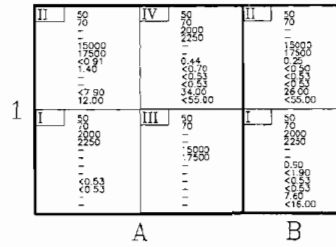
FLOOR
ROOM 301A



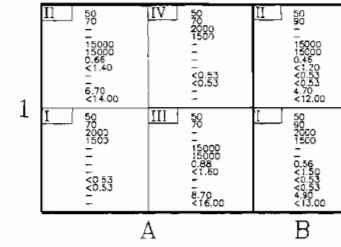
FLOOR
ROOM 301B



W1



W2



W1

Note:

1. Because new flooring was installed in 1989, no IM-247/PD readings were obtained on floor grids. Also, one core sample for each floor grid was obtained in lieu of two solid material samples for each grid, and core sample results are presented where solid sample results were called for.

Units Legend:

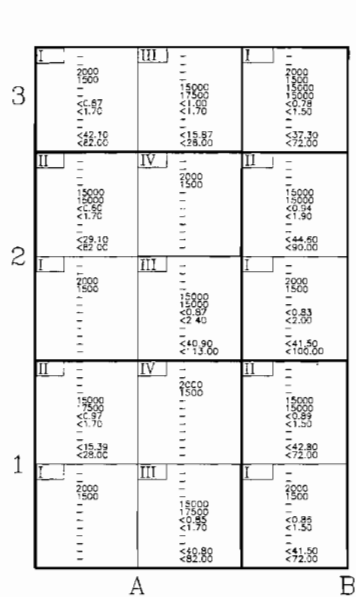
1 - IM-247/PD [dpm]
2 - IM-247/PD [cpm]
3 - IM-253/PD [dpm]
4 - IM-253/PD [cpm]
5 - IM-253/PD (HV-2 GROSS) [dpm]
6 - IM-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <3 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <3 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [dpm/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [dpm/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

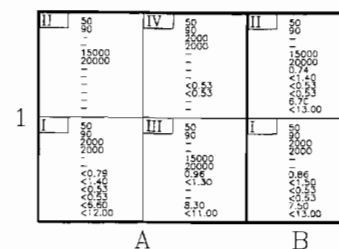
CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

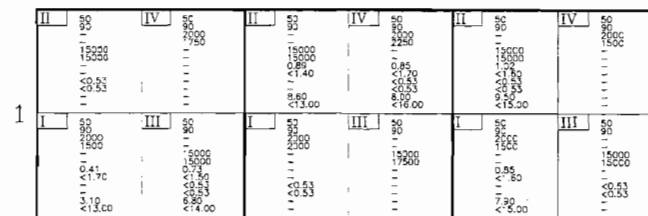
d. Localized Grid Map



FLOOR
ROOM 301C



W1



W2

Note:

1. Because new flooring was installed in 1986, no IN-247/PD readings were obtained on floor grids. Also, one core sample for each floor grid was obtained in lieu of two solid material samples for each grid, and core sample results are presented where solid sample results were not obtained.

Data Legend:

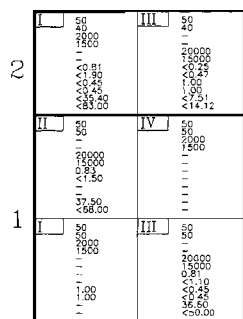
1 - IN-247/PD [bkg]
2 - IN-247/PD [cpm]
3 - IN-253/PD (V-1) PHA [bkg]
4 - IN-253/PD (V-1) PHA [cpm]
5 - IN-253/PD (V-2) CROSS [bkg]
6 - IN-253/PD (V-2) CROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <50

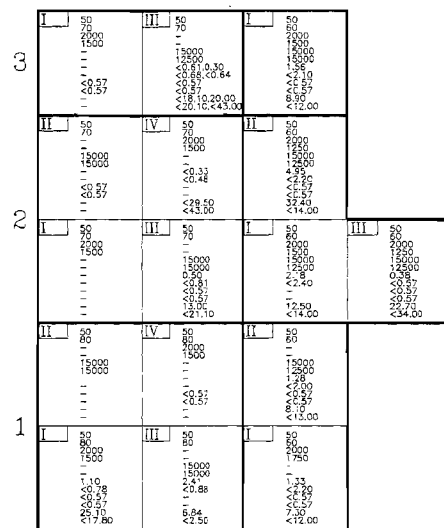
CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

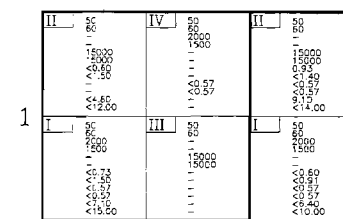
d. Localized Grid Map



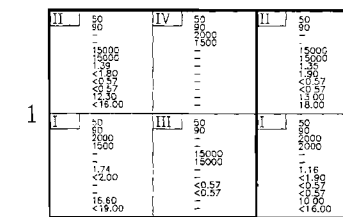
FLOOR
ROOM 302



FLOOR
ROOM 303



W1



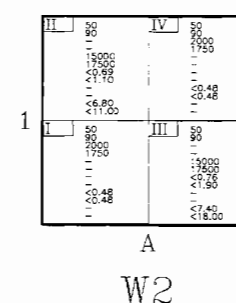
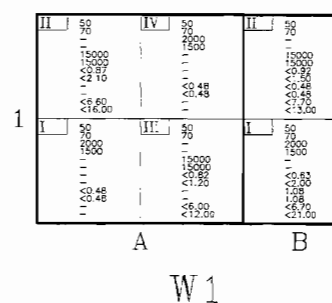
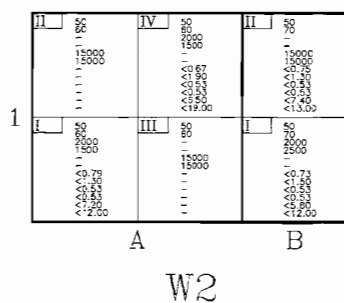
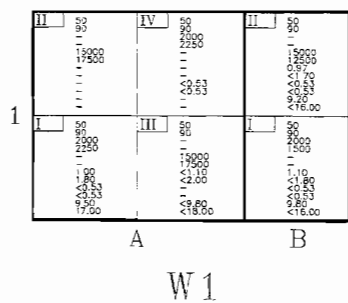
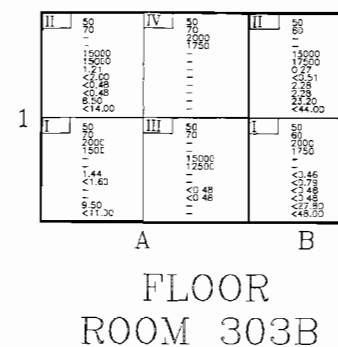
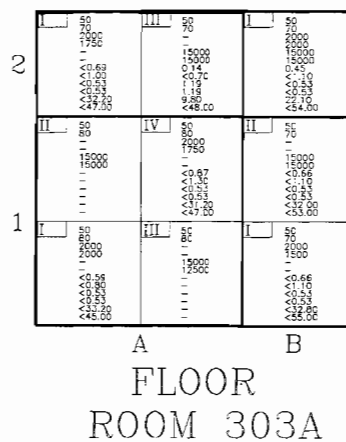
W2

Data Legend:
 1 - M-247/PD [Bq]
 2 - M-247/PD [cpm]
 3 - M-247/PD (HV-1 PHA) [Bq]
 4 - M-253/PD (HV-1 PHA) [cpm]
 5 - M-253/PD (HV-2 CROSS) [Bq]
 6 - M-253/PD (HV-2 CROSS) [cpm]
 7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

d. Localized Grid Map



Data Legend:
1 - IV-247/PD [bkg.]
2 - IV-247/PD [cpm]
3 - IV-247/PD [PM] [bkg.]
4 - IV-247/PD [PM] [cpm]
5 - IV-247/PD [PM] [bkg.]
6 - IV-247/PD [PM] [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.3 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <45

d. Localized Grid Map

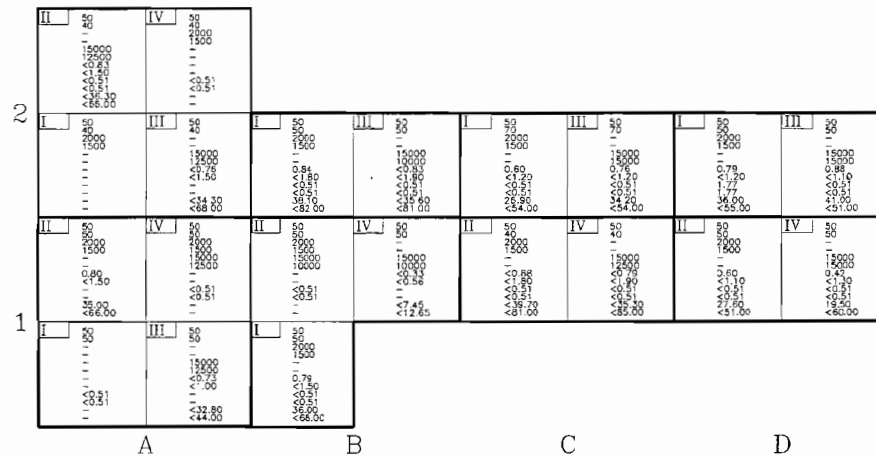


7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
10 - Th-232 Removable Radioactivity [pCi/100cm2]: Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm2]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm2]: Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

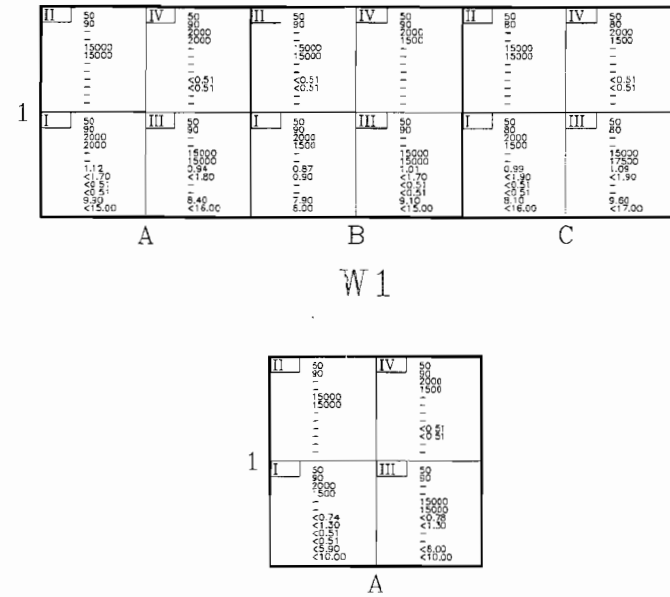
d. Localized Grid Map



FLOOR
EASTSIDE HALL

Data Legend:
 1 - M-247/PD [bkg.]
 2 - M-247/PD [cpm]
 3 - M-253/PD [cpm] FHA [bkg.]
 4 - M-253/PD [cpm] FHA [cpm]
 5 - M-253/PD [cpm] (HV-1) [bkg.]
 6 - M-253/PD (HV-2) [cpm]
 7 - M-253/PD (HV-2) [cpm]
 8 - M-253/PD (HV-2) [cpm]
 9 - M-253/PD (HV-2) [cpm]
 10 - M-253/PD (HV-2) [cpm]
 11 - M-253/PD (HV-2) [cpm]
 12 - M-253/PD (HV-2) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <5
 10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <50
 11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450



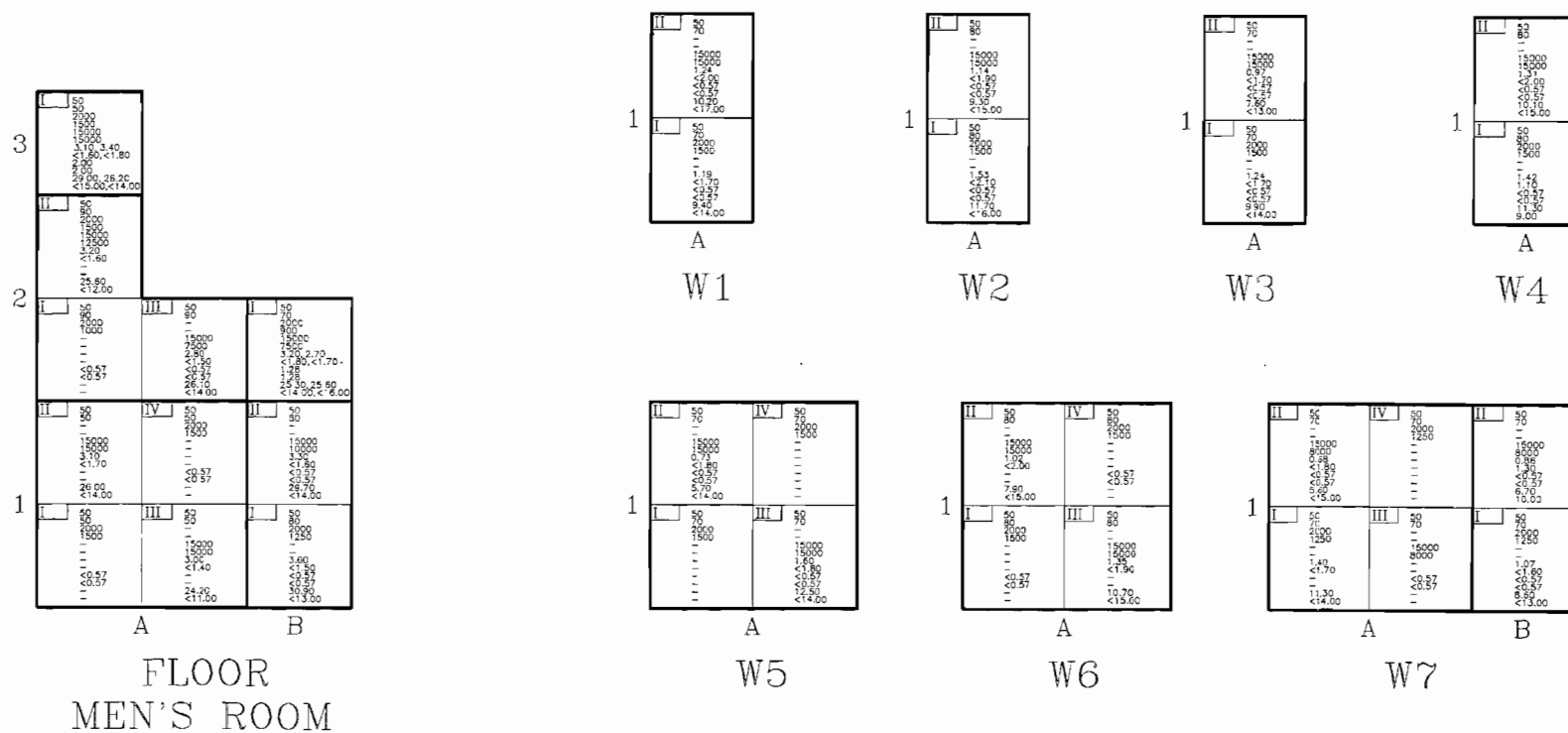
W1

W3

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

d. Localized Grid Map



Data Legend:

1 - M-247/P3 [bkg]

2 - M-247/P3 [cpm]

3 - M-253/P3 (IV-1 PHA) [bkg]

4 - M-253/P3 (IV-2 PHA) [cpm]

5 - M-253/P3 (IV-2 GROSS) [bkg]

6 - M-253/P3 (IV-2 GROSS) [cpm]

7 - Ra-226 Self Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g

8 - Th-232 Self Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g

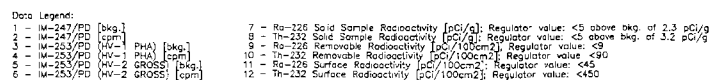
9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <9

10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <9

11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45

12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

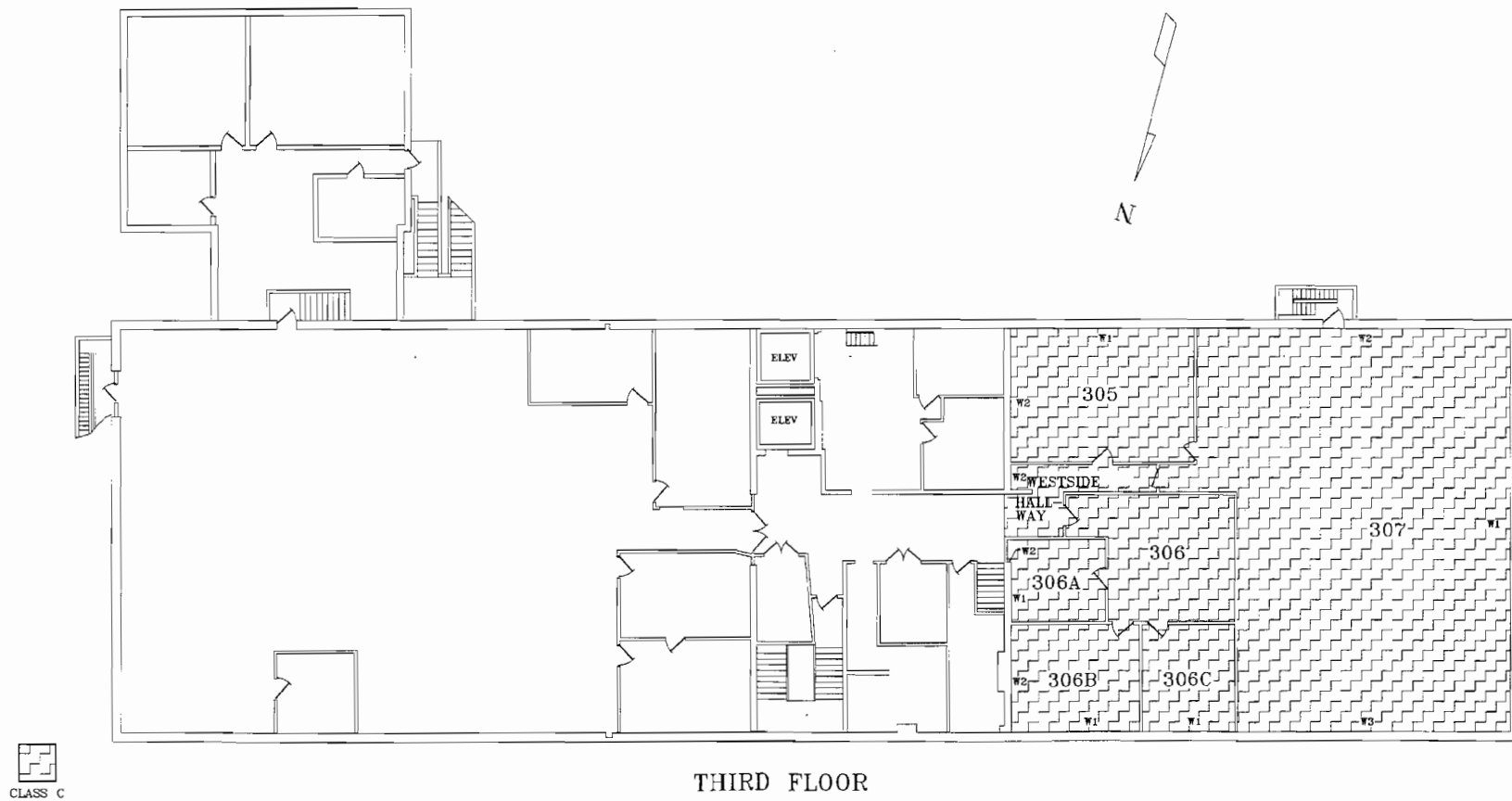
Section 5.c Building 13, Third Floor



CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

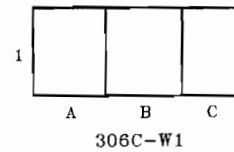
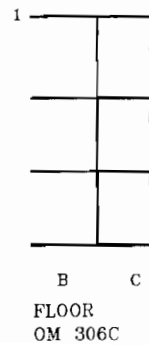
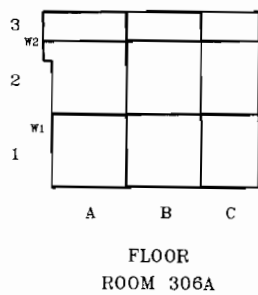
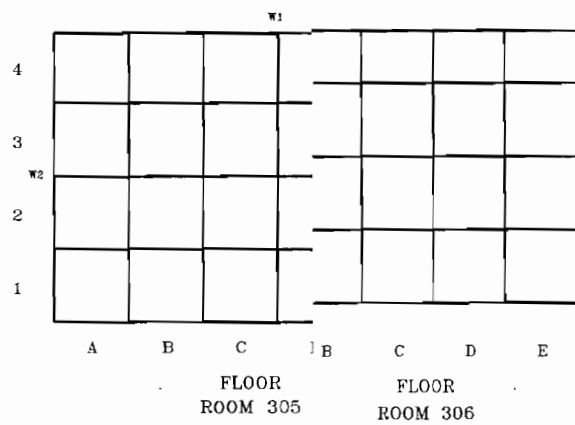
d. Site Map, Class C



CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

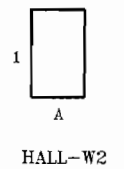
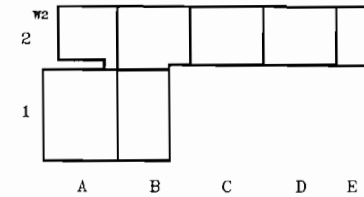
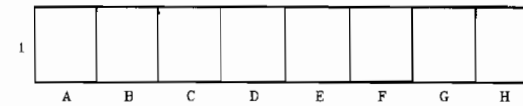
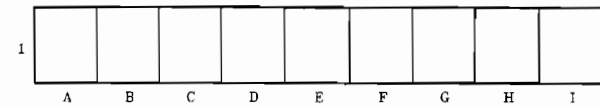
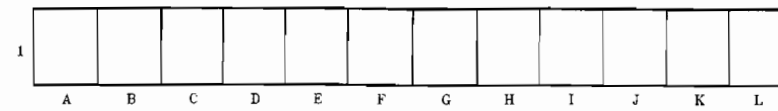
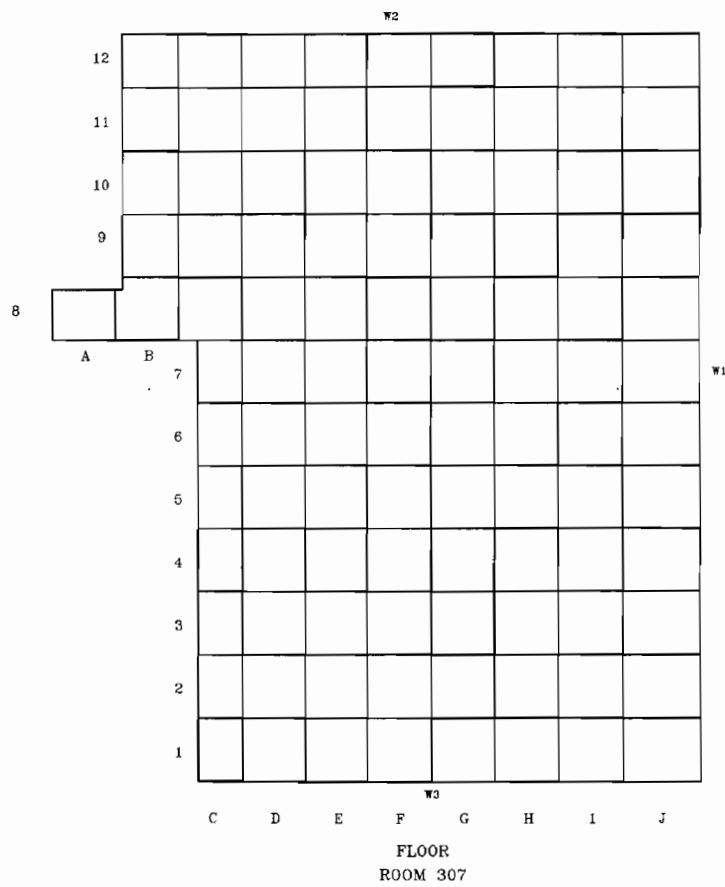
d. Overall Grid Map, Class C



CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

d. Overall Grid Map, Class C



CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

d. Localized Grid Map, Class C

4	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00
3	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00
2	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00
1	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00
	A	B	C	D	E	F

FLOOR
ROOM 305

1	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00
	A	B	C	D	E	F

W1

1	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00	50 2000 1500 1500 0.42 0.78 20.80 20.80 25.00 446.00
	A	B	C	D

W2

Data Legend:
1 - IM-247/PD [dkg]
2 - IM-247/PD [cpm]
3 - IM-253/PD (HV-1 PHA) [dkg]
4 - IM-253/PD (HV-1 PHA) [cpm]
5 - IM-253/PD (HV-2 GRSS) [dkg]
6 - IM-253/PD (HV-2 GRSS) [cpm]

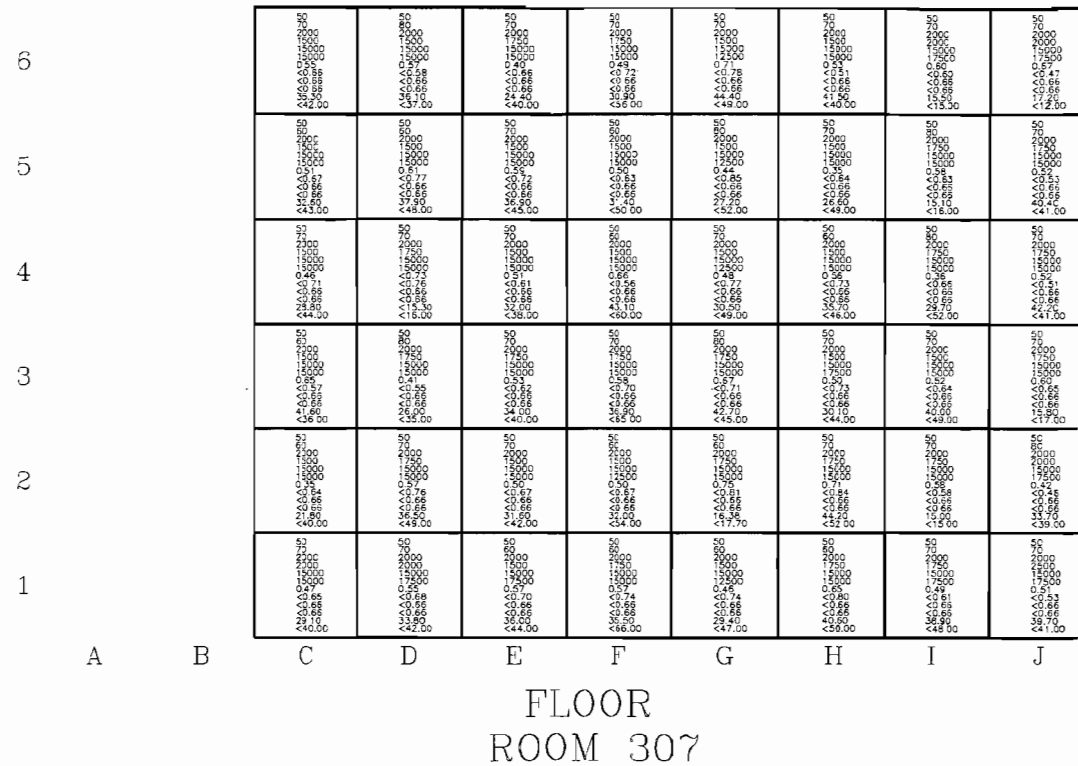
7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regular value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regular value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]: Regular value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regular value: <30
11 - Ra-226 Surface Radioactivity [pCi/100cm²]: Regular value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regular value: <450

d. Localized Grid Map

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

d. Localized Grid Map



Data Legend:

- 1 - W-247/PD [bq]
- 2 - W-247/PD [cpm]
- 3 - W-253/PD [bq]
- 4 - W-253/PD [cpm]
- 5 - W-253/PD [bq]
- 6 - W-253/PD [cpm]
- 7 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

d. Localized Grid Map

[illegible]FLOOR
ROOM 307 (Continued)

Data Legend:

- | | | | | | | | |
|---|---|-----------|--------|----|---|--------|---|
| 1 | - | IM-247/PD | [bkg.] | 7 | - | Ra-226 | Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 | - | IM-247/PD | [cpm] | 8 | - | Th-232 | Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 | - | IM-253/PD | [bkg.] | 9 | - | Ra-228 | Removable Radioactivity [pCi/100cm2]: Regulator value: <90 |
| 4 | - | IM-253/PD | [bkg.] | 10 | - | Th-232 | Removable Radioactivity [pCi/100cm2]: Regulator value: <90 |
| 5 | - | IM-253/PD | [cpm] | 11 | - | Ra-228 | Surface Radioactivity [pCi/100cm2]: Regulator value: <45 |
| 6 | - | IM-253/PD | [cpm] | 12 | - | Th-232 | Surface Radioactivity [pCi/100cm2]: Regulator value: <450 |

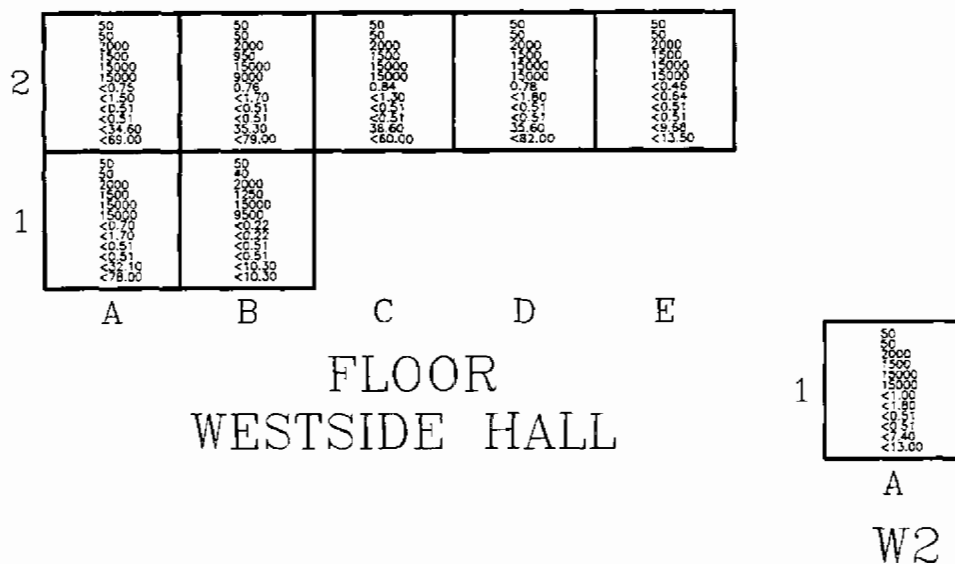
d. Localized Grid Map

35

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

d. Localized Grid Map



Data Legend:

- 1 - IM-247/PD [bkg.]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [bkg.]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [bkg.]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]

- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs



Room 301, viewing east.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs



Room 301B, viewing east.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs

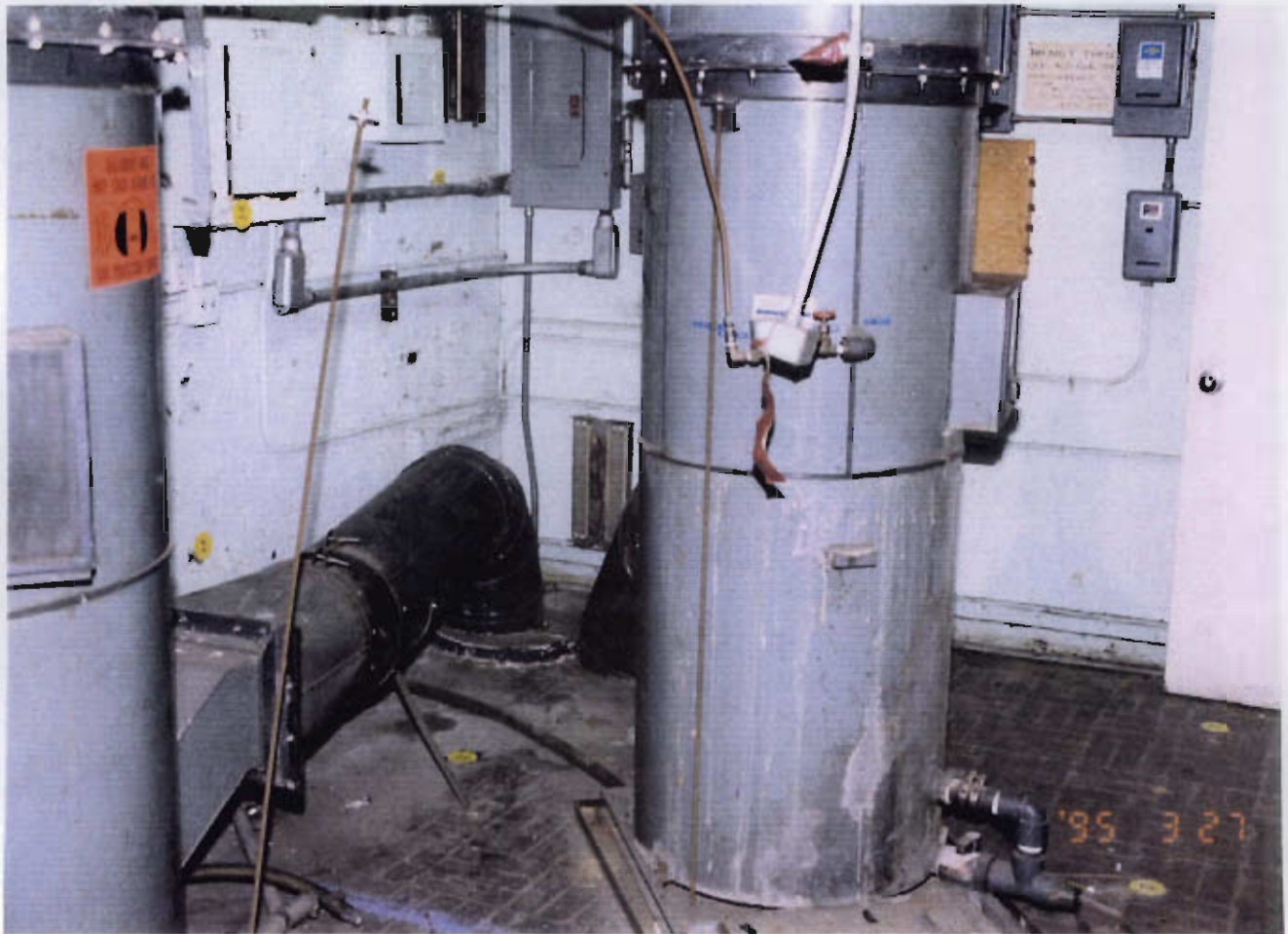


Room 301C, viewing south.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs

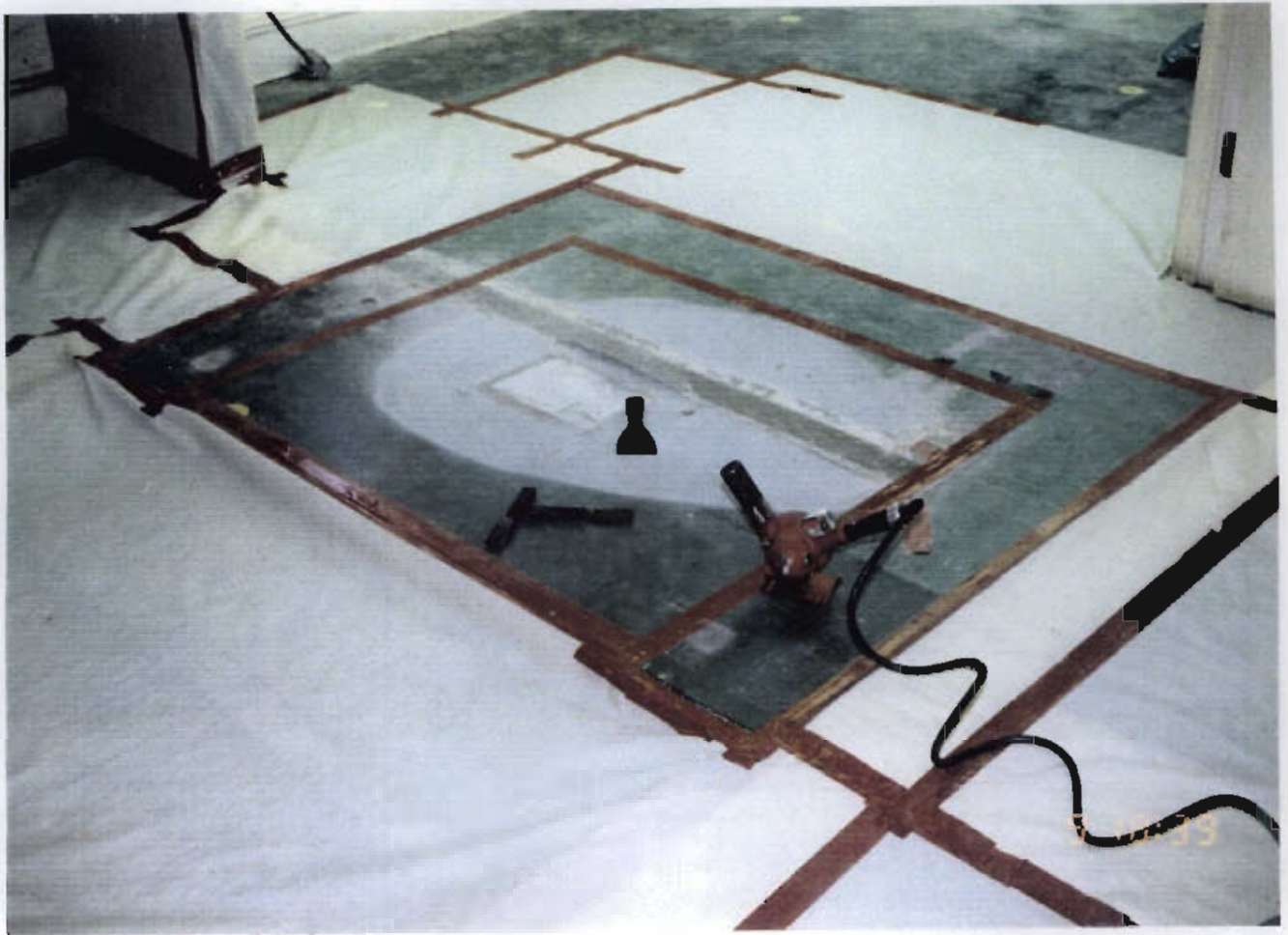


Room 301D, viewing west.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs



Room 303B, viewing west.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs

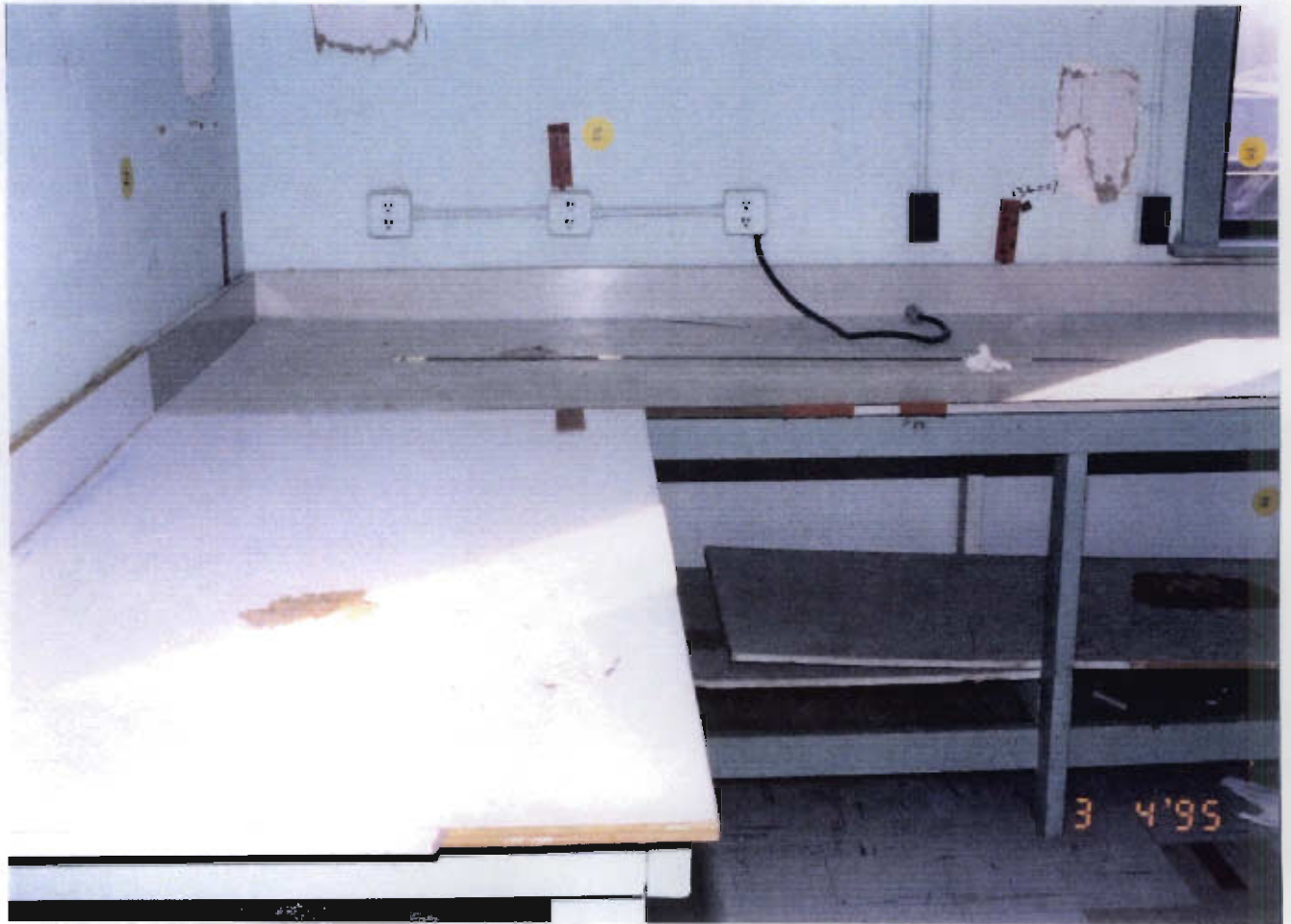


Room 304, viewing north.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs



Counting Room, viewing east.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs

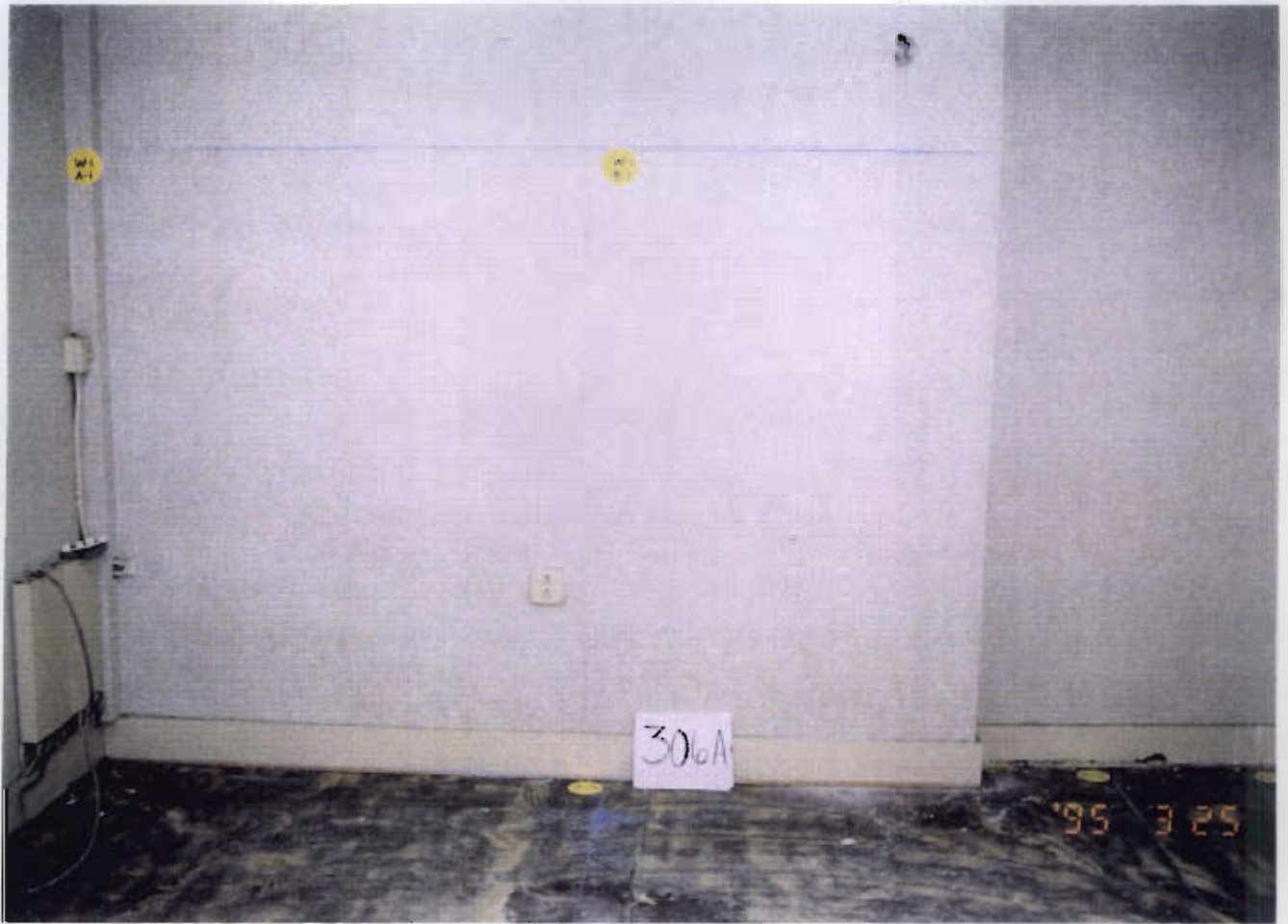


Room 306, viewing southwest.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs

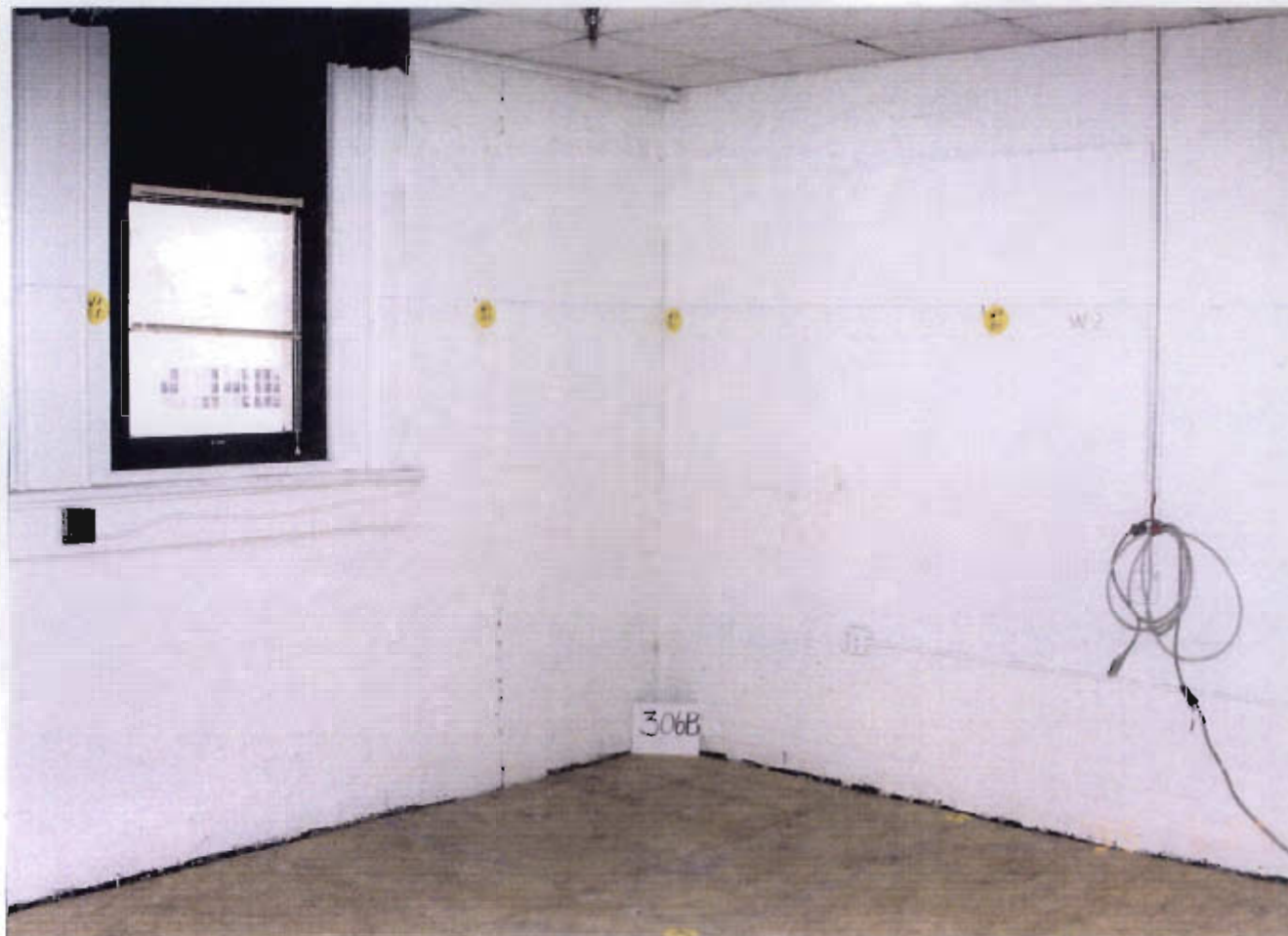


Room 306A, viewing east.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs



Room 306B, viewing north.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs



Room 306C, viewing north.

CNSY G-RAM FINAL REPORT

Section 5.c Building 13, Third Floor

e. Photographs



Room 307, viewing west.

CNSY G-RAM FINAL REPORT

Section 6. Bldg. 32

a. Introduction:

Building 32 was constructed in 1909 as the Central Power Plant and is located at the intersection of Hobson Avenue and McMillan Avenue.

(1) Description:

Building 32 is a three-story structure, irregular in plan, with the main mass being of rectangular shape. There are two round smoke stacks located at the north and south ends of the building. The foundation is of poured concrete and the exterior wall is material blond brick. It presently serves as the Central Power Plant.

(2) Brief History:

(a) **Use:** Building 32 has six ash hoppers that received a G-RAM release survey. Each of the six ash hoppers contained an ash level detector system with a Cs-137 source. The sources, which were removed prior to survey, consisted of 100 millicuries of Cs-137.

(b) **Radiological History:** Radiological history indicates that no known spread of radioactivity occurred.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

Each ash hopper was externally marked with one grid, for a total of six grids, with a maximum size of 20' by 20'.

Each grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific in a Class A survey, however the actual size of the ash hoppers did not allow for sub-grids, therefore entries five and six were entered on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

CNSY G-RAM FINAL REPORT

Section 6. Bldg. 32

A minimum of two swipes/smears were taken from each grid.

A minimum of one solid material sample was taken from each ash hopper. The solid material samples consisted of ash removed from the hopper.

Background levels used in Building 32 ash hoppers were determined from similar materials in Building 32 coal hoppers.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas with surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipe/smear surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.64 pCi/100 cm² to a high of 2.23 pCi/100 cm².

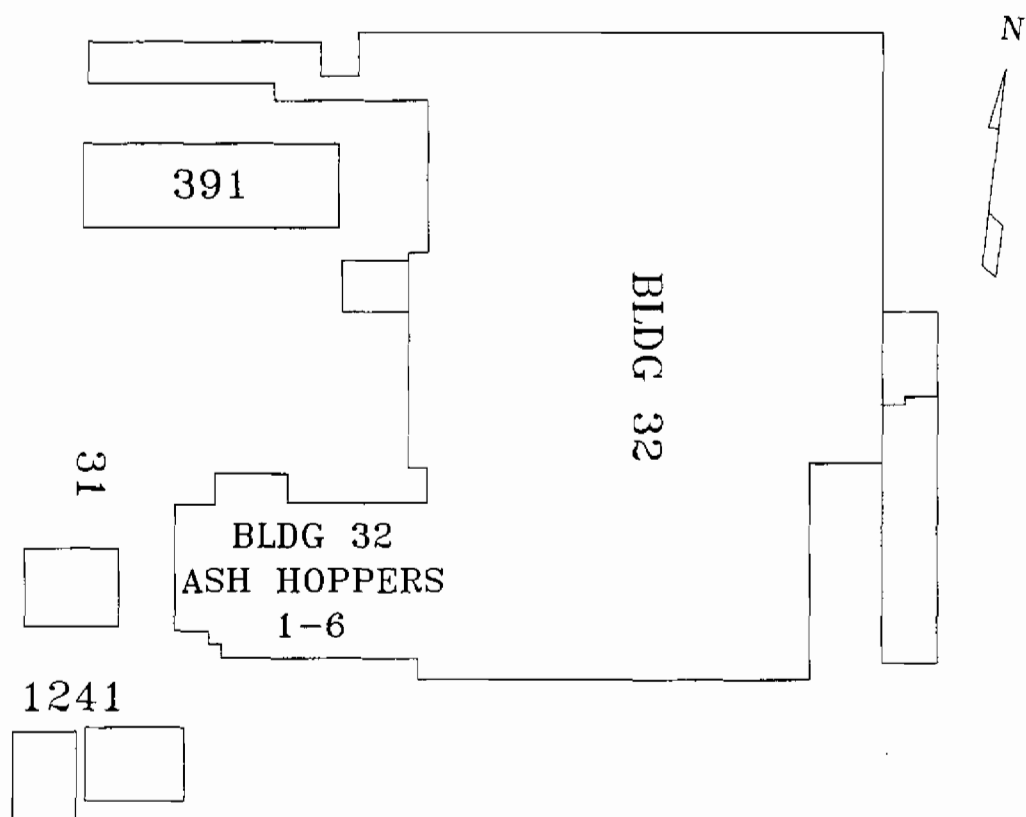
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 samples were less than 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.62 pCi/g to a high of 3.44 pCi/g and Th-232 solid material samples ranged from a low of 0.44 pCi/g to a high of 2.50 pCi/g.

There were no traces of Cs-137 from the detector system sources.

CNSY G-RAM FINAL REPORT

Section 6. Bldg. 32

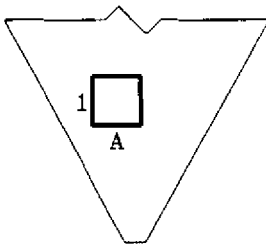
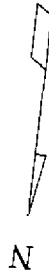
d. Site Map



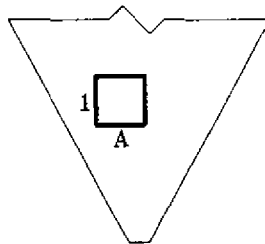
CNSY G-RAM FINAL REPORT

Section 6. Bldg. 32

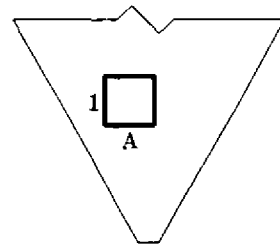
e. Overall Grid Map



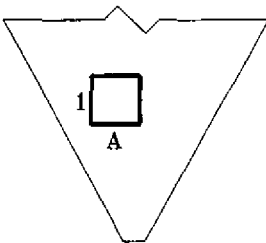
ASH HOPPER #1



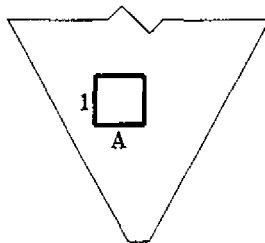
ASH HOPPER #2



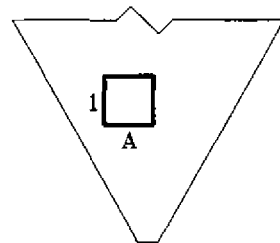
ASH HOPPER #3



ASH HOPPER #4



ASH HOPPER #5



ASH HOPPER #6

CNSY G-RAM FINAL REPORT

Section 6. Bldg. 32

f. Photographs



Ash Hopper

CNSY G-RAM FINAL REPORT

Section 7. Building 35

a. Introduction:

Building 35 was built in 1913 as the Welding School. It is located at Hobson Avenue and Second Street outside the CIA. Building 1127 is attached to the north side of the building.

(1) Description:

It consists of two building masses, two stories in height forming an L-shaped facility. The single story portion has walls covered with concrete stucco on the exterior resting on a concrete foundation. Reinforced concrete forms the flat roof. A concrete loading ramp is on the south side of the building.

(2) Brief History:

(a) **Use:** On the first floor of Building 35, tungsten welding rods were handled, stored and prepared.

(b) **Radiological History:** In the southwest corner of the building radioactive material was received and temporarily stored. No other radiological work operations were performed in this area. Radiological history indicates that no contamination above the limit has been detected.

Class A release survey's were performed on the machine shop area, evaluation area, etching area/hallway, sample preparation area, welding shops number #1 and #2.

Class B release survey's were performed on storage areas B1 and B2, welding area number 1, welding area number 2, welding area 3, welding booths/research and development area, hot house, welding rod storage, issue and preparation cage, weld rod grinding area and machine shop storage areas A1 and A2.

(3) Survey Requirements:

- (a) Class A release survey.
- (b) Class B release survey.

b. Discussion:

(1) Class A:

For the Class A survey, the floor of Building 35 was divided into a total of 53 grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. For walk thru survey results, entries 5 and 6 were used when investigative samples were required due to areas exceeding twice background for the IM-247/PD and IM-253/PD(HV-1 PHA) readings. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 35 were determined from similar materials in Building 417.

(2) Class B:

For the Class B survey, the floor of Building 35 was divided into a total of 72 grids with a maximum size of 10' by 10'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

The walls were horizontally divided into 253 grids with a maximum size of 6' high and 10' wide. Each of these wall grids was subdivided into sub-grids with an approximate size of 3' high by 5' wide. The steps were divided into 17 grids, the columns were divided into 16 grids approximately 6' high.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of two solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 35 were determined from similar materials in Building 417.

c. Summary:

(1) Class A:

Surveys performed in the Class A area's with the IM-247/PD detected 10 areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than 9 pCi/100 cm² and removable Th-232 levels were less than 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.64 pCi/100 cm² to a high of 1.44 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than 5 pCi/g above background. MCA analysis performed on Ra-226 solid material samples ranged from a low of less than 0.29 pCi/g to a high of 1.46 pCi/g and Th-232 solid material samples ranged from a low of less than 0.55 pCi/g to a high of less than 2.30 pCi/g.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 3.20 pCi/100 cm² to a high of 34.00 pCi/100 cm² and the Th-232 levels ranged from a low of less than 6.00 pCi/100 cm² to a high of less than 48.00 pCi/100 cm².

(2) Class B:

Initial solid material samples indicated the presence of Thorium 232 in the Weld Rod Grinding Area and in Weld Area No. 2.

In the Weld Rod Grinding Area, the affected area was small, approximately 61 sq. ft. The grids affected were W1-A1-II, W1-A1-IV, W2-A1-II and F-A1-I. The maximum found was 9.05 pCi/g and the average was 1.33 pCi/g. No removeable surface radioactivity was encountered.

In Welding Area No. 2, the area was small, approximately 1 sq. ft. The grid affected was W-B7-A1-II. One sample indicated 154 pCi/g. Investigative samples around the original sample indicated no activity detected above the regulator values. Therefore, it was concluded only 1 sq. ft. was contaminated.

The above areas were remediated and the post remediation results are summarized below and on the localized grid maps.

Surveys performed in the Class B areas with the IM-247/PD detected 12 areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than 9 pCi/100 cm² and removable Th-232 levels were less than 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.59 pCi/100 cm² to a high of 6.90 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than 5 pCi/g above background. MCA analysis

CNSY G-RAM FINAL REPORT

Section 7. Building 35

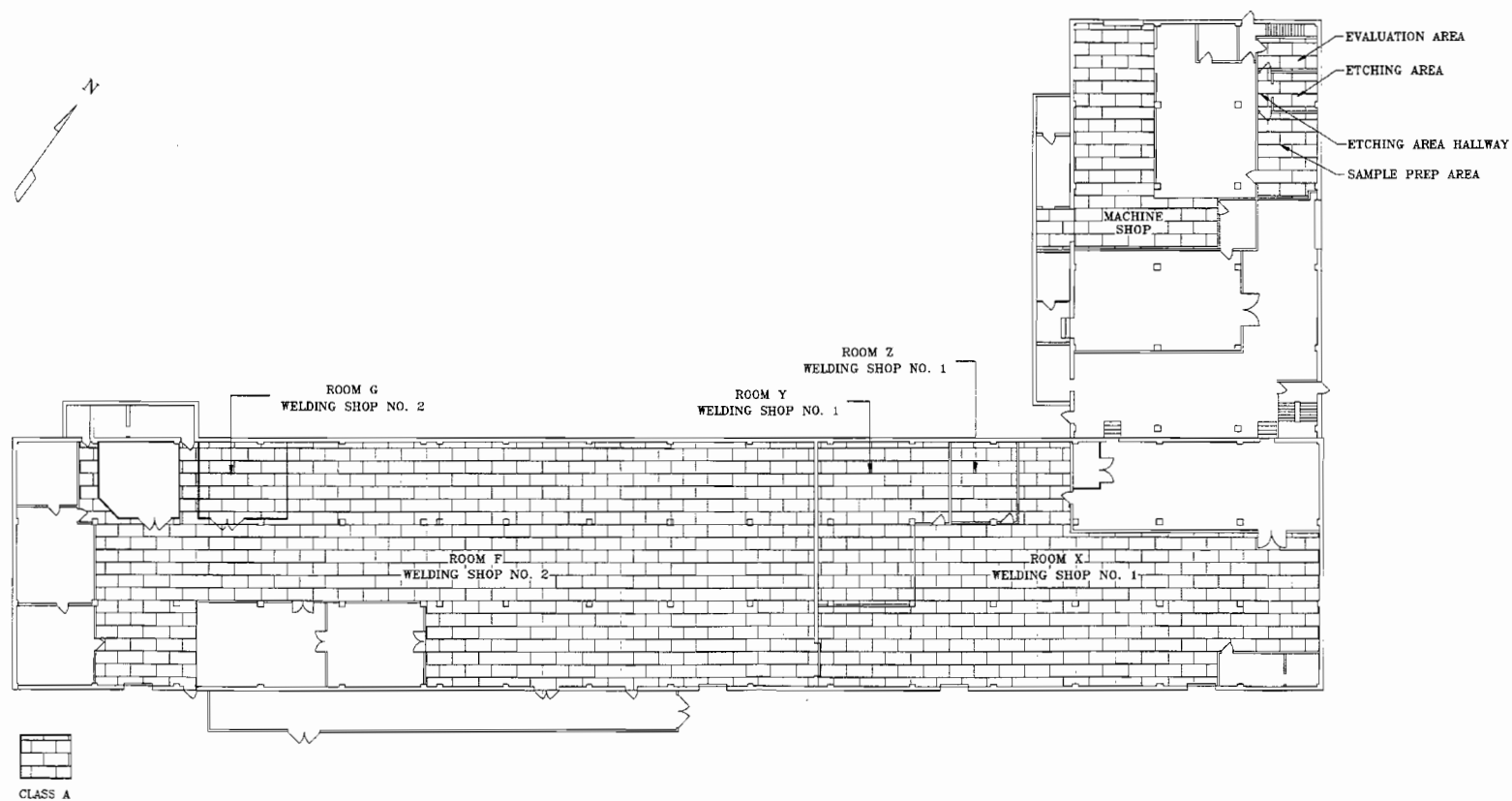
performed on Ra-226 solid material samples ranged from a low of 0.38 pCi/g to a high of less than 3.44 pCi/g and Th-232 solid material samples ranged from a low of less than 0.77 pCi/g to a high of less than 3.00 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 1.30 pCi/100 cm² to a high of 38.10 pCi/100 cm² and the Th-232 levels ranged from a low of less than 1.00 pCi/100 cm² to a high of less than 37.90 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 7. Building 35

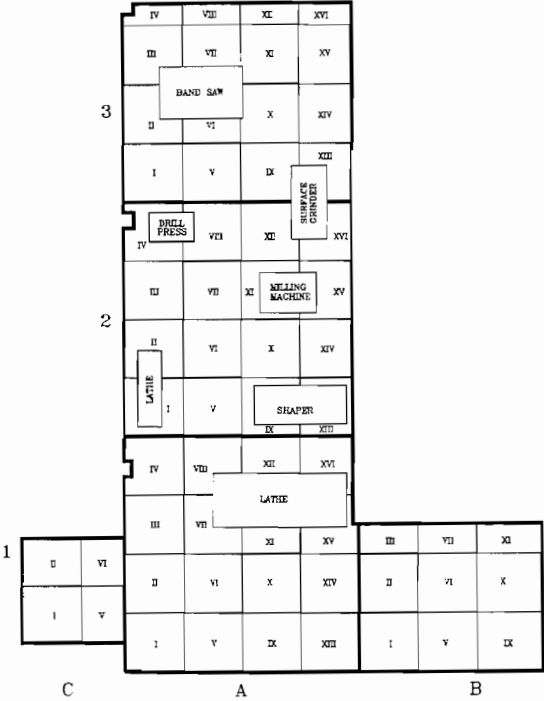
d. Site Map, Class A



CNSY G-RAM FINAL REPORT

Section 7. Building 35

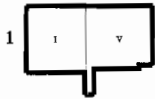
e. Overall Grid Map, Class A



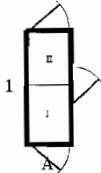
BUILDING 35
MACHINE SHOP



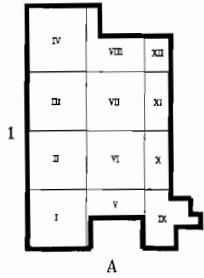
FLOOR
EVALUATION AREA



FLOOR
ETCHING AREA



FLOOR
ETCHING AREA
HALLWAY



FLOOR
SAMPLE PREP AREA

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Overall Grid Map, Class A

2	IV	VIII	XII	XVI	IV	VIII
	III	VII	XI	XV	III	VII
	II	VI	X	XIV	II	VI
	I	V	IX	XIII	I	V
1	IV	VIII	XII	XVI		
	III	VII	XI	XV		
	II	VI	X	XIV		
	I	V	IX	XIII		

A
FLOOR
ROOM Y
WELDING SHOP NO. 1

1	IV	VIII	XII
	III	VII	XI
	II	VI	X
	I	V	IX

A
FLOOR
ROOM Z
WELDING SHOP NO. 1

3	VIII	XII	XVI
	VII	XI	XV
	VI	X	XIV
	V	IX	XIII

2	IV	VIII	XII	XVI	IV	VIII	XII	XVI	IV	VIII	XII	XVI	IV	VIII	XII	XVI	IV	VIII	XII	XVI
	III	VII	XI	XV	III	VII	XI	XV	III	VII	XI	XV	III	VII	XI	XV	III	VII	XI	XV
	II	VI	X	XIV	II	VI	X	XIV	II	VI	X	XIV	II	VI	X	XIV	II	VI	X	XIV
	I	V	IX	XIII	I	V	IX	XIII	I	V	IX	XIII	I	V	IX	XIII	I	V	IX	XIII
1	IV	VIII	XII	XVI	IV	VIII	XII	XVI	IV	VIII	XII	XVI	IV	VIII	XII	XVI	IV	VIII	XII	XVI
	III	VII	XI	XV	III	VII	XI	XV	III	VII	XI	XV	III	VII	XI	XV	III	VII	XI	XV
	II	VI	X	XIV	II	VI	X	XIV	II	VI	X	XIV	II	VI	X	XIV	II	VI	X	XIV
	I	V	IX	XIII	I	V	IX	XIII	I	V	IX	XIII	I	V	IX	XIII	I	V	IX	XIII

A B C D E F
FLOOR
ROOM X
WELDING SHOP NO. 1

e. Localized Grid Map, Class A

FLOOR
ROOM G
WELDING SHOP NO. 2

FLOOR
ROOM F
WELDING SHOP NO. 2

e. Localized Grid Map

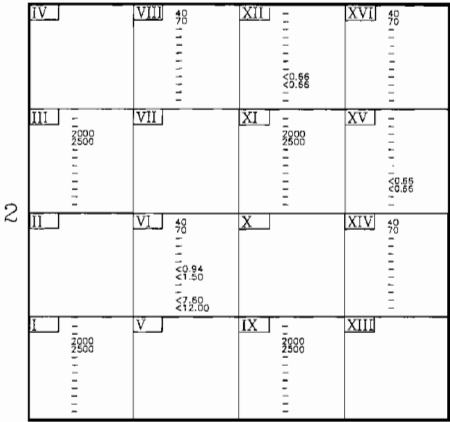


7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]: Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regulator value: <450

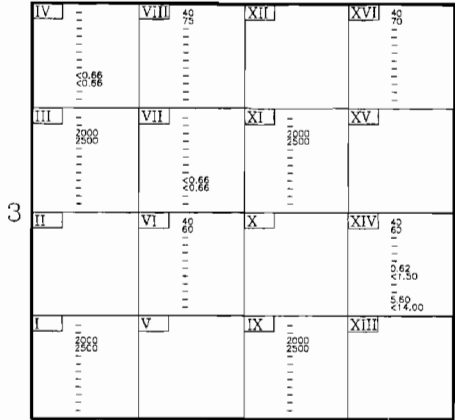
CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



A
FLOOR
MACHINE SHOP



A
FLOOR
MACHINE SHOP

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

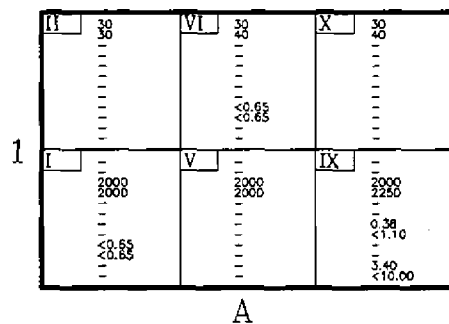
Data Legend:
1 - M-247/PD [bkg.]
2 - M-247/PD [cpm]
3 - M-253/PD (HV-1 PHA) [bkg.]
4 - M-253/PD (HV-1 PHA) [cpm]
5 - M-253/PD (HV-2 GROSS) [bkg.]
6 - M-253/PD (HV-2 GROSS) [cpm]

7 - Re-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg of 3.2 pCi/g
9 - Re-226 Removable Rad activity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <50
11 - Re-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR EVALUATION AREA

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:

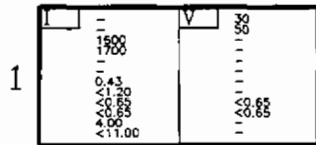
1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-253/PD (HV-1 PHA) [bkg.]
4 - IM-253/PD (HV-1 PHA) [cpm]
5 - IM-253/PD (HV-2 GROSS) [bkg.]
6 - IM-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

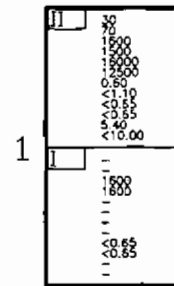
Section 7. Building 35

e. Localized Grid Map



A

FLOOR
ETCHING AREA



A

FLOOR
ETCHING AREA
HALLWAY

Note:
Entries 5 and 6 are not required for Class "A" Localized
Grid Maps. See the Discussion paragraph.

Data Legend:

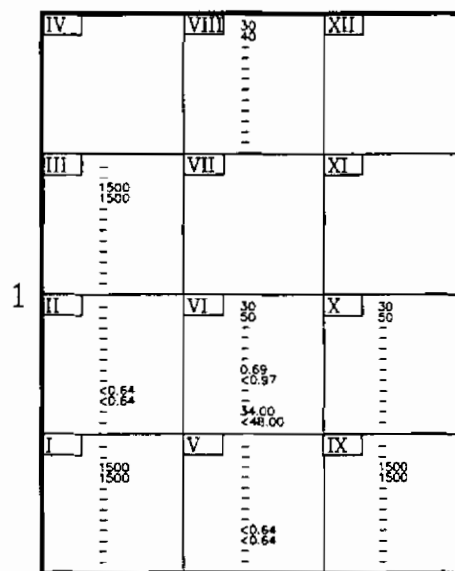
1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-253/PD (HV-1 PHA) [bkg.]
4 - IM-253/PD (HV-1 PHA) [cpm]
5 - IM-253/PD (HV-2 GROSS) [bkg.]
6 - IM-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



A
FLOOR
SAMPLE PREP AREA

Data Legend:

- | | |
|-----------------------------------|--|
| 1 - IM-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD (HV-1) PHA [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - IM-253/PD (HV-1) PHA [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90 |
| 5 - IM-253/PD (HV-2 GROSS) [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - IM-253/PD (HV-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

e. Localized Grid Map

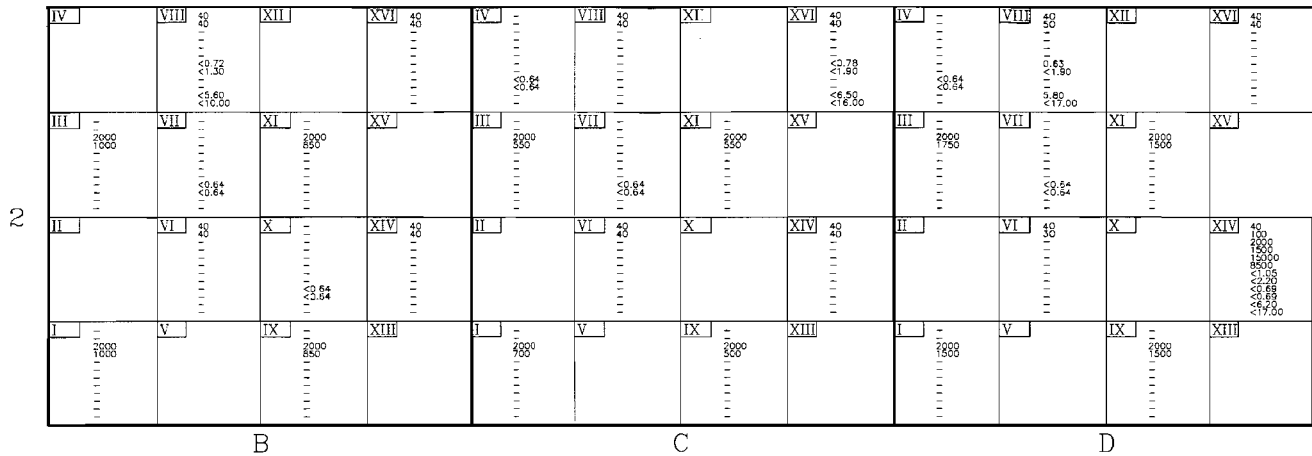


7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]: Regulator value: <5
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR
ROOM X
WELDING SHOP NO. 1

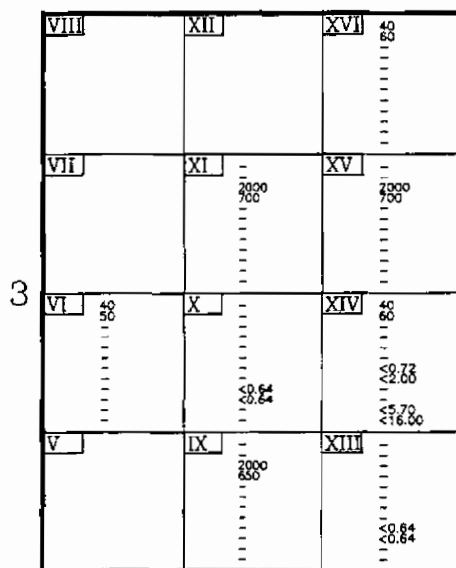
Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:
1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-253/PD (HV-1 PHA) [bkg.]
4 - IM-253/PD (HV-1 PHA) [cpm]
5 - IM-253/PD (HV-2 GROSS) [bkg.]
6 - IM-253/PD (HV-2 GROSS) [cpm]
7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm2]. Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm2]. Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm2]. Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm2]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



C

FLOOR ROOM X WELDING SHOP NO. 1

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

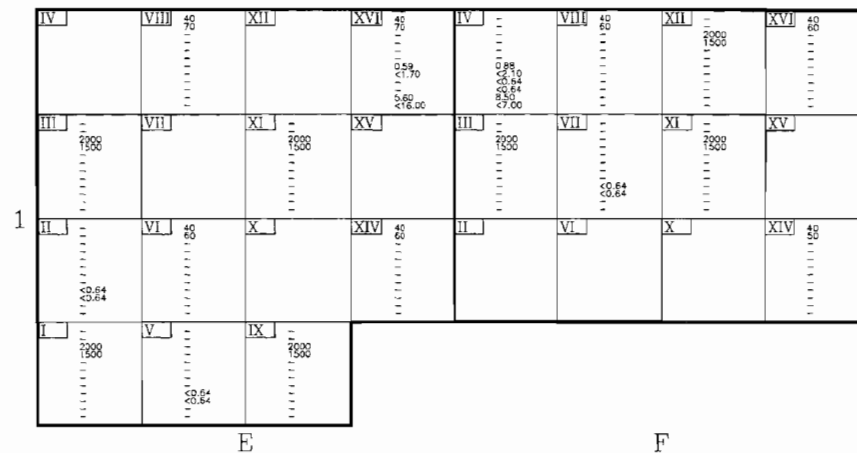
Data Legend:

1 - IM-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PD (HV-1 PHA) [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - IM-253/PD (HV-1 PHA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90
5 - IM-253/PD (HV-2 GROSS) [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PD (HV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR
ROOM X
WELDING SHOP NO. 1

Note:
Entries 5 and 6 are not required for Class A' Localized
Grid Map pages. See the Discussion paragraph.

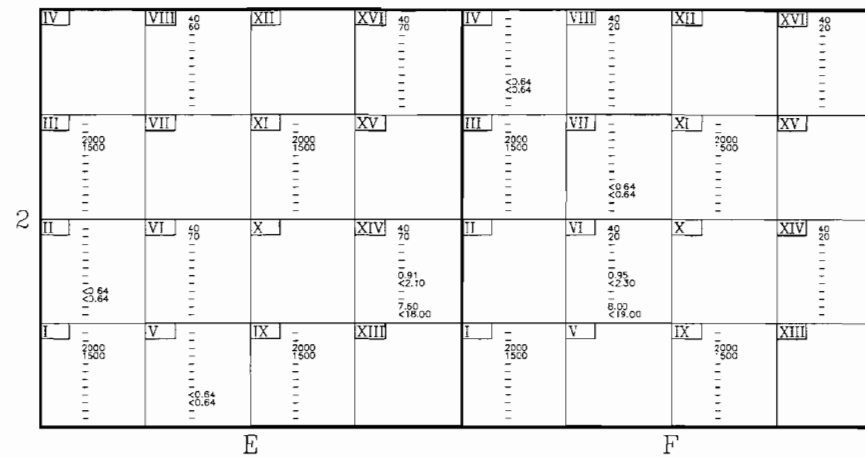
Data Legend:
1 - M-241/PD [Bq]
2 - M-241/PD [cpm]
3 - M-251/PD (W-1 PHA) [Bq]
4 - M-251/PD (W-1 PHA) [cpm]
5 - M-251/PD (W-2 GROSS) [Bq]
6 - M-251/PD (W-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <9
11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR ROOM X WELDING SHOP NO. 1

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

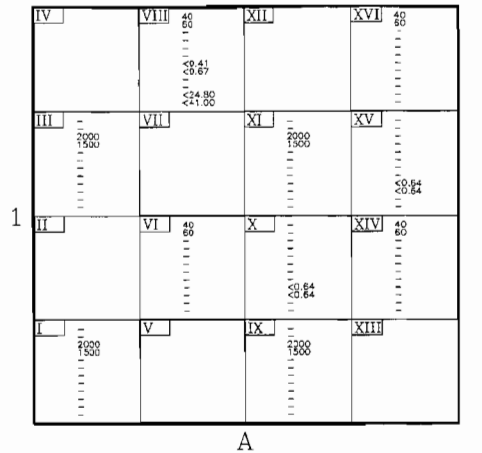
Data Legend:
1 - W-247/PO [bkg]
2 - W-247/PO [cpm]
3 - W-253/PO (W-1 PHA) [bkg]
4 - W-253/PO (W-1 PHA) [cpm]
5 - W-253/PO (W-2 GROSS) [bkg]
6 - W-253/PO (W-2 GROSS) [cpm]

7 - Ra-228 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-228 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <80
11 - Ra-228 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

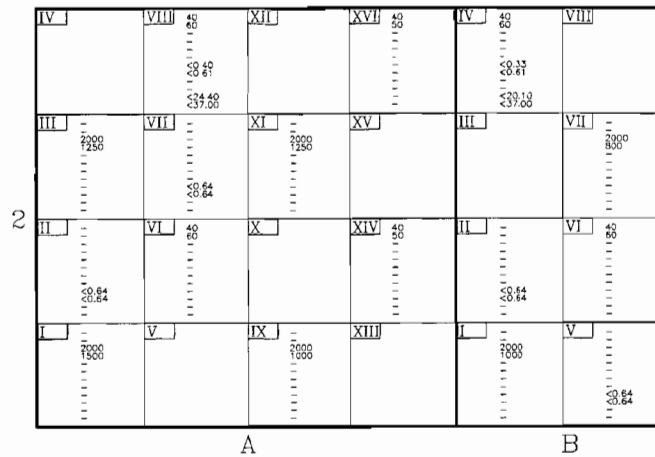
CNSY G-RAM FINAL REPORT

Section 7. Building 35

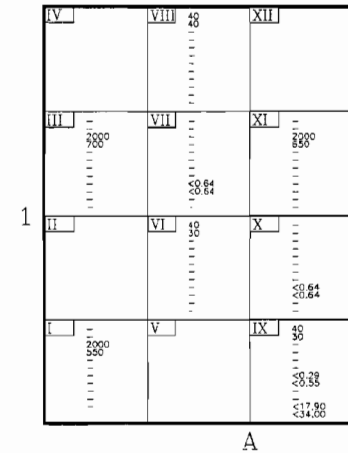
e. Localized Grid Map



FLOOR
ROOM Y
WELDING SHOP NO. 1



FLOOR
ROOM Y
WELDING SHOP NO. 1



FLOOR
ROOM Z
WELDING SHOP NO. 1

Notes:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

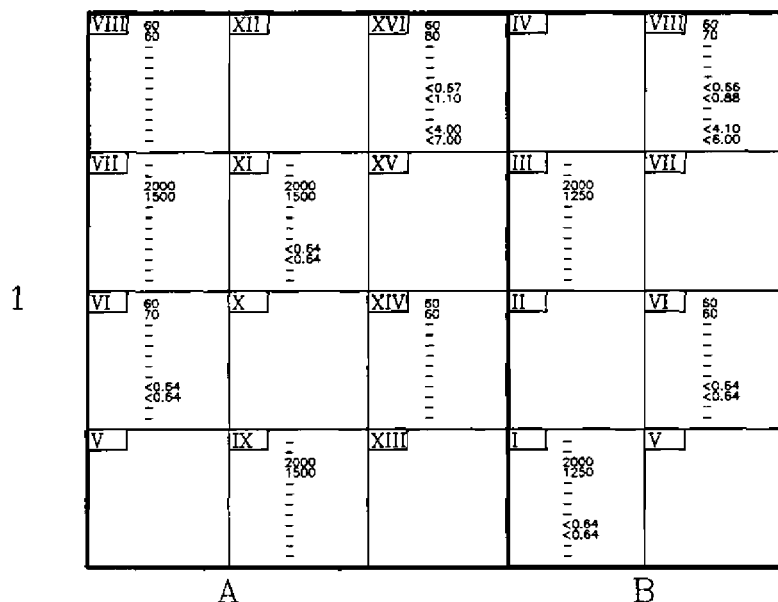
Data Legend:
1 - IN-247/PD [bkg.]
2 - IN-247/PD [cpm]
3 - IN-247/PD [bkg.]
4 - IN-253/PD [bkg.]
5 - IN-253/PD [cpm]
6 - IN-253/PD [bkg.]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <5
10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <50
11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <40
12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR ROOM F WELDING SHOP NO. 2

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:

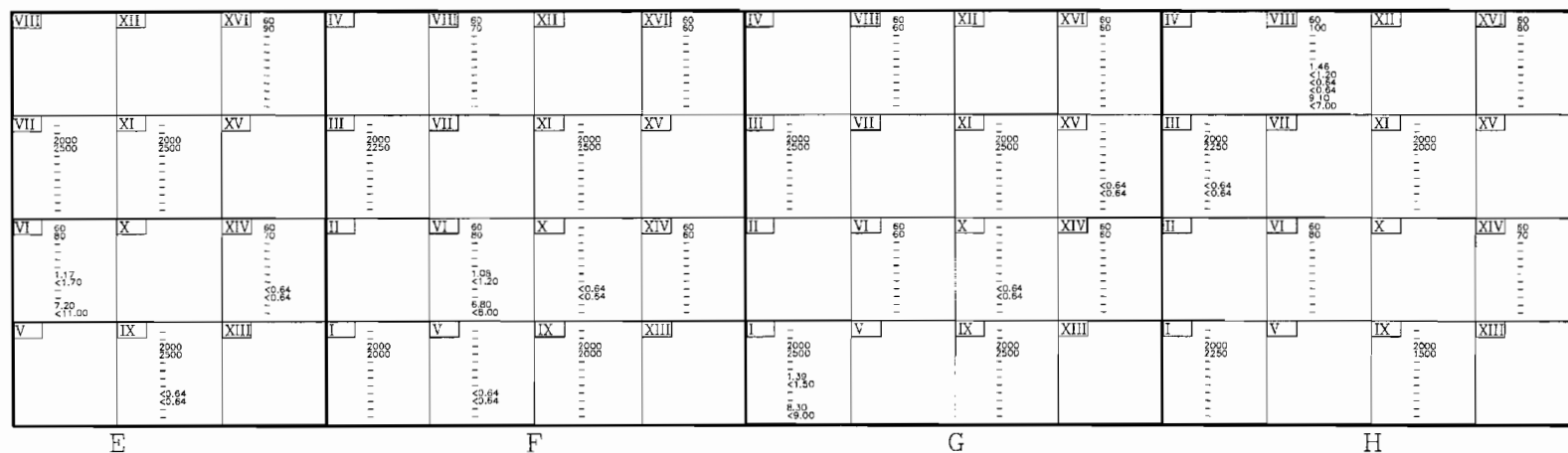
- | | |
|-----------------------------------|--|
| 1 - IM-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD (HV-1 PHA) [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - IM-253/PD (HV-1 PHA) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90 |
| 5 - IM-253/PD (HV-2 GROSS) [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - IM-253/PD (HV-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map

1



FLOOR ROOM F WELDING SHOP NO. 2

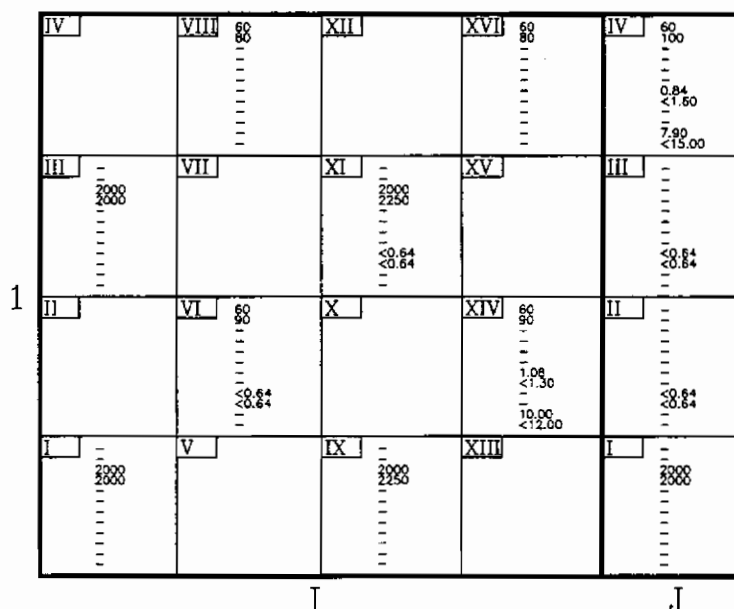
Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:
1 - IN-247/PD [pkg,1]
2 - IN-247/PD [cpm]
3 - IN-253/PD [pkg,1]
4 - IN-253/PD [cpm]
5 - IN-253/PD [pkg,1]
6 - IN-253/PD [cpm]
7 - Re-228 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Re-228 Removable Radioactivity [pCi/100cm²]. Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <90
11 - Re-228 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR ROOM F WELDING SHOP NO. 2

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:

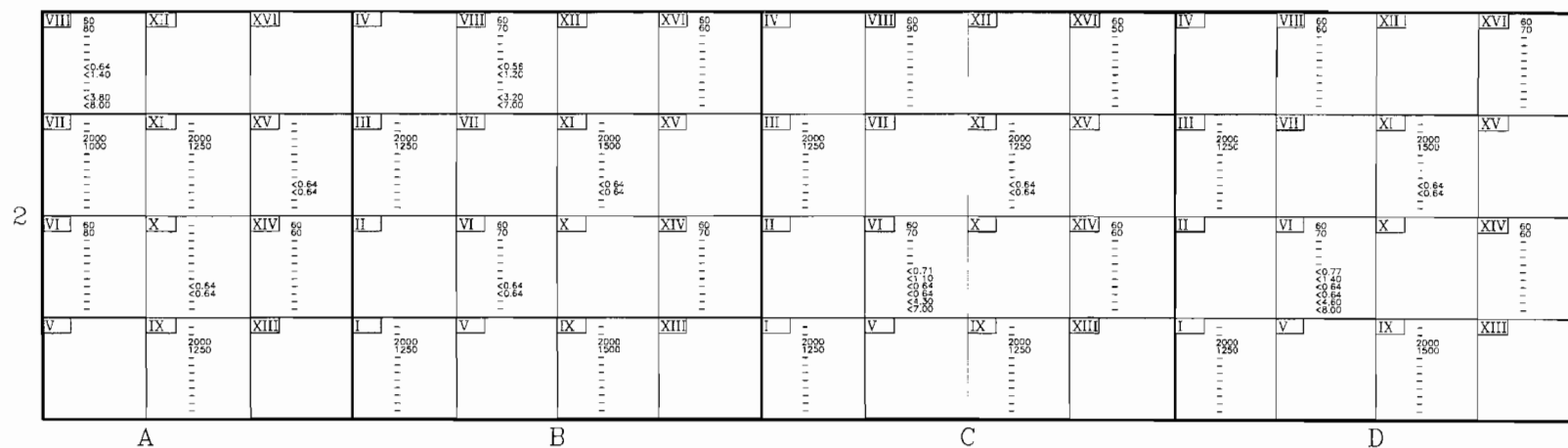
- 1 - IM-247/PD [bkg.]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [bkg.]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [bkg.]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]

- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR ROOM F WELDING SHOP NO. 2

Note:
Entries 5 and 6 are not required for Class "A" Localized
Grid Map pages. See the Discussion paragraph.

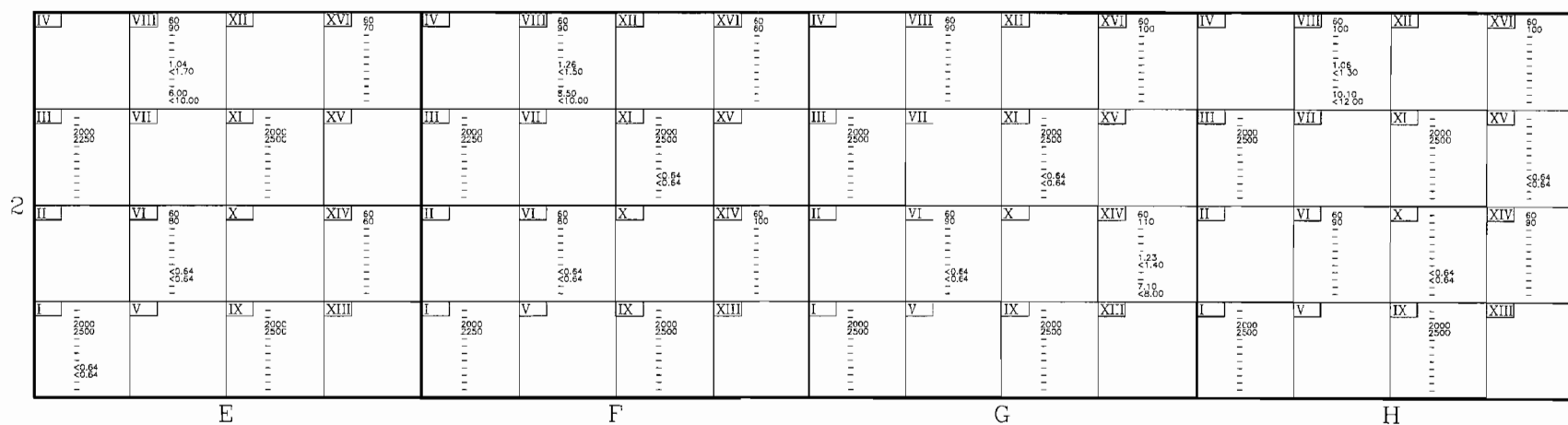
Data Legend:
1 - M-247/PD [bkg.]
2 - M-247/PD [cpm]
3 - M-253/PD (HV-1 PHA) [bkg.]
4 - M-253/PD (HV-1 PHA) [cpm]
5 - M-253/PD (HV-2 GROSS) [bkg.]
6 - M-253/PD (HV-2 GROSS) [cpm]

7 - R-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Tm-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - R-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
10 - Tm-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
11 - R-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Tm-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR ROOM F WELDING SHOP NO. 2

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

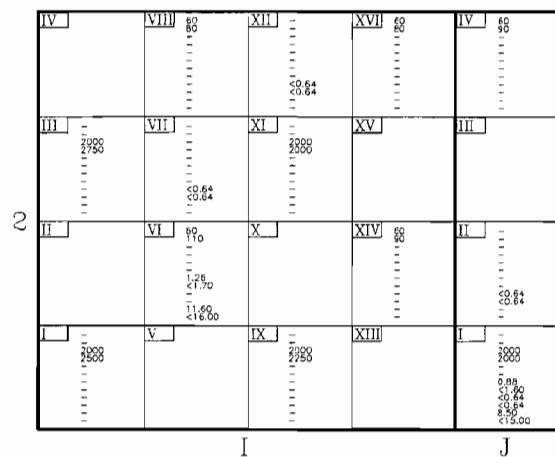
Data Legend:
1 - M-247/PD [bkg.]
2 - M-247/PD [cpm]
3 - M-253/PD (HV-1 PHA) [bkg.]
4 - M-253/PD (HV-1 PHA) [cpm]
5 - M-253/PD (HV-2 GRCS) [bkg.]
6 - M-253/PD (HV-2 GRCS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regular value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g], Regular value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regular value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²], Regular value: <9
11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regular value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²], Regular value: <450

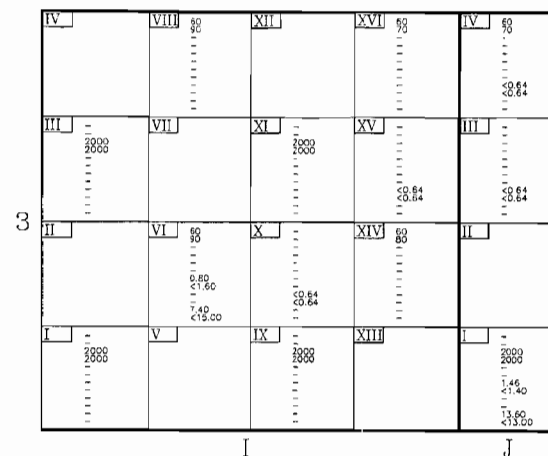
CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR
ROOM F
WELDING SHOP NO. 2



FLOOR
ROOM F
WELDING SHOP NO. 2

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

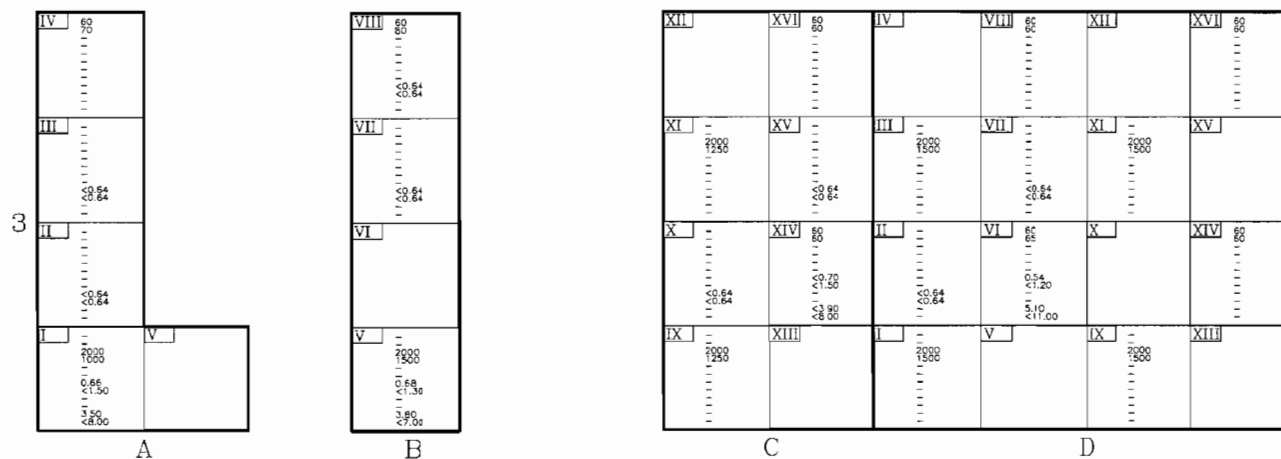
Data Legend:
1 - M-247/PD [Bq/g]
2 - M-247/PD [cpm]
3 - M-247/PD (HV- P4A) [Bq/g]
4 - M-247/PD (HV- P4A) [cpm]
5 - M-247/PD (HV-2 GROSS) [Bq/g]
6 - M-247/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <3 above Bq/g of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <3 above Bq/g of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <80
11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR ROOM F WELDING SHOP NO. 2

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

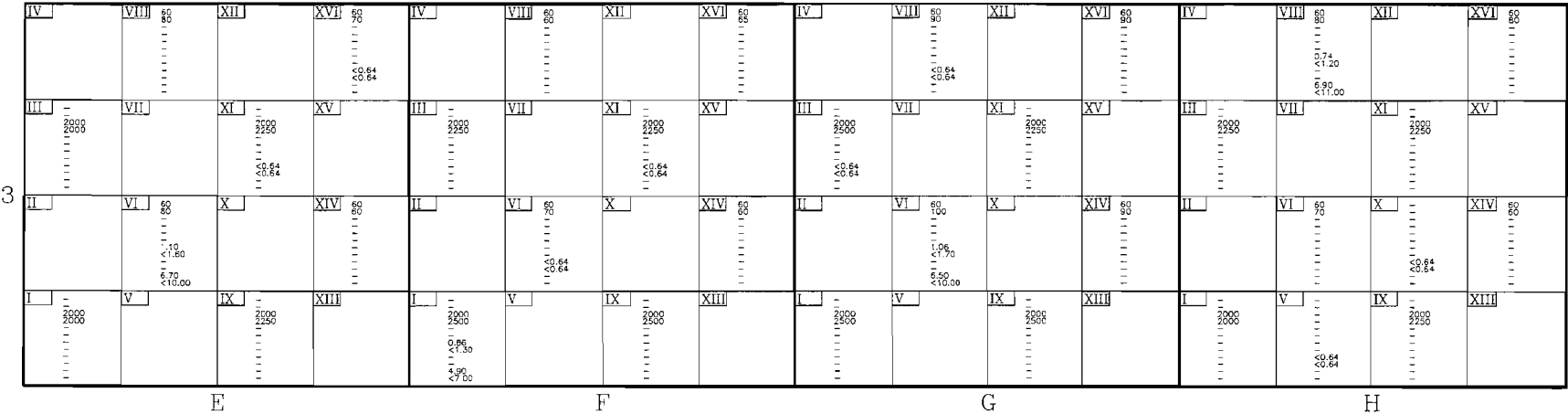
Data Legend:
1 - W-247/PD [bkg]
2 - W-247/PD [cpm]
3 - W-253/PD (PHA) [bkg]
4 - W-253/PD (PHA) [cpm]
5 - W-253/PD (HV-2 GROSS) [bkg]
6 - W-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <9
11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



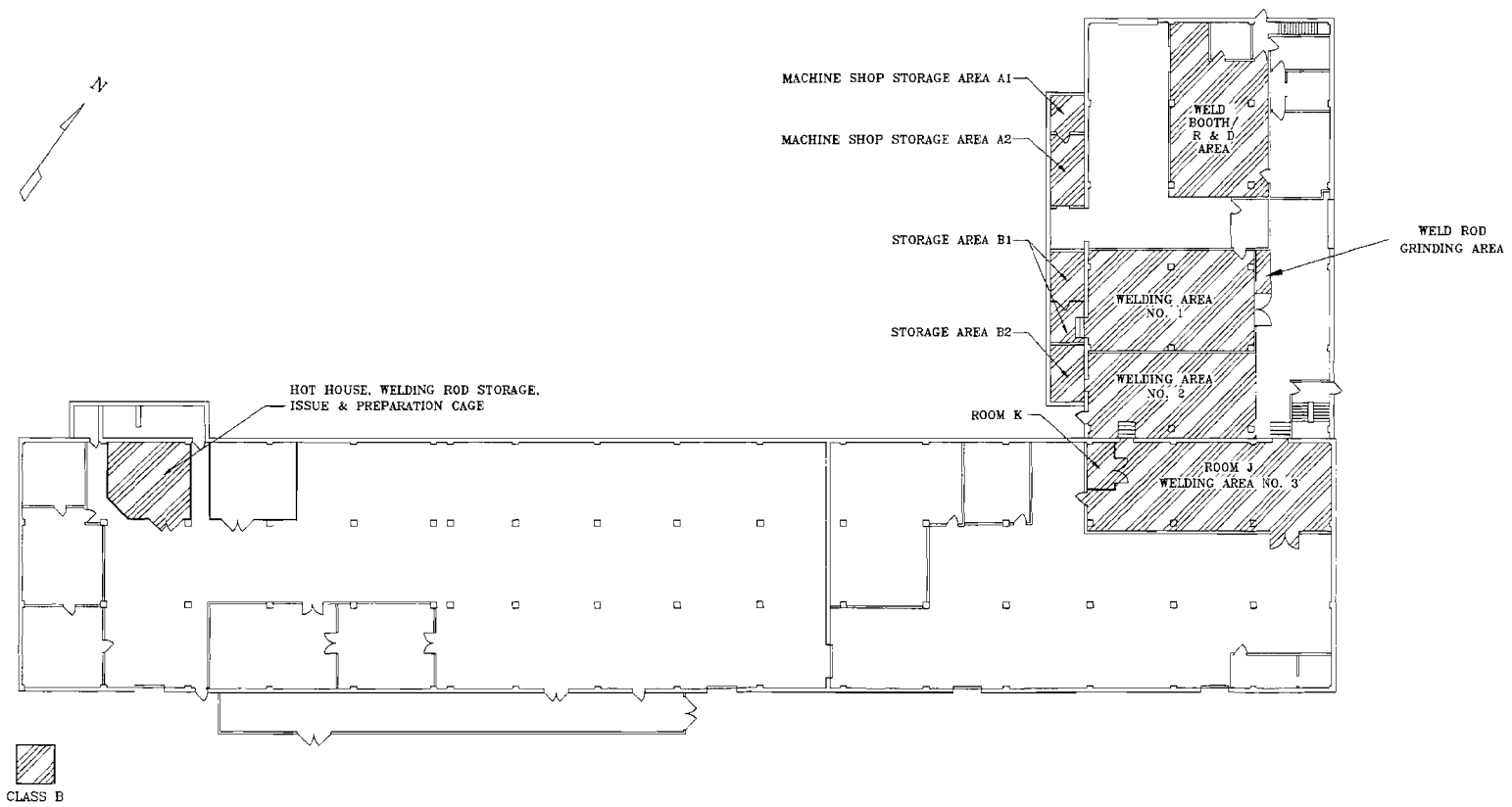
Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:		7 - Rn-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
1 - W-247/PD [bkg.]		8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
2 - W-247/PD [cpm]		9 - Rn-226 Removable Radioactivity [pCi/100cm ²], Regulator value: <5
3 - W-253/PD (HV-1 PHA) [bkg.]		10 - Th-232 Removable Radioactivity [pCi/100cm ²], Regulator value: <50
4 - W-253/PD (HV-1 PHA) [cpm]		11 - Rn-226 Surface Radioactivity [pCi/100cm ²], Regulator value: <45
5 - W-253/PD (HV-2 GROSS) [bkg.]		12 - Th-232 Surface Radioactivity [pCi/100cm ²], Regulator value: <450
6 - W-253/PD (HV-2 GROSS) [cpm]		

CNSY G-RAM FINAL REPORT

Section 7. Building 35

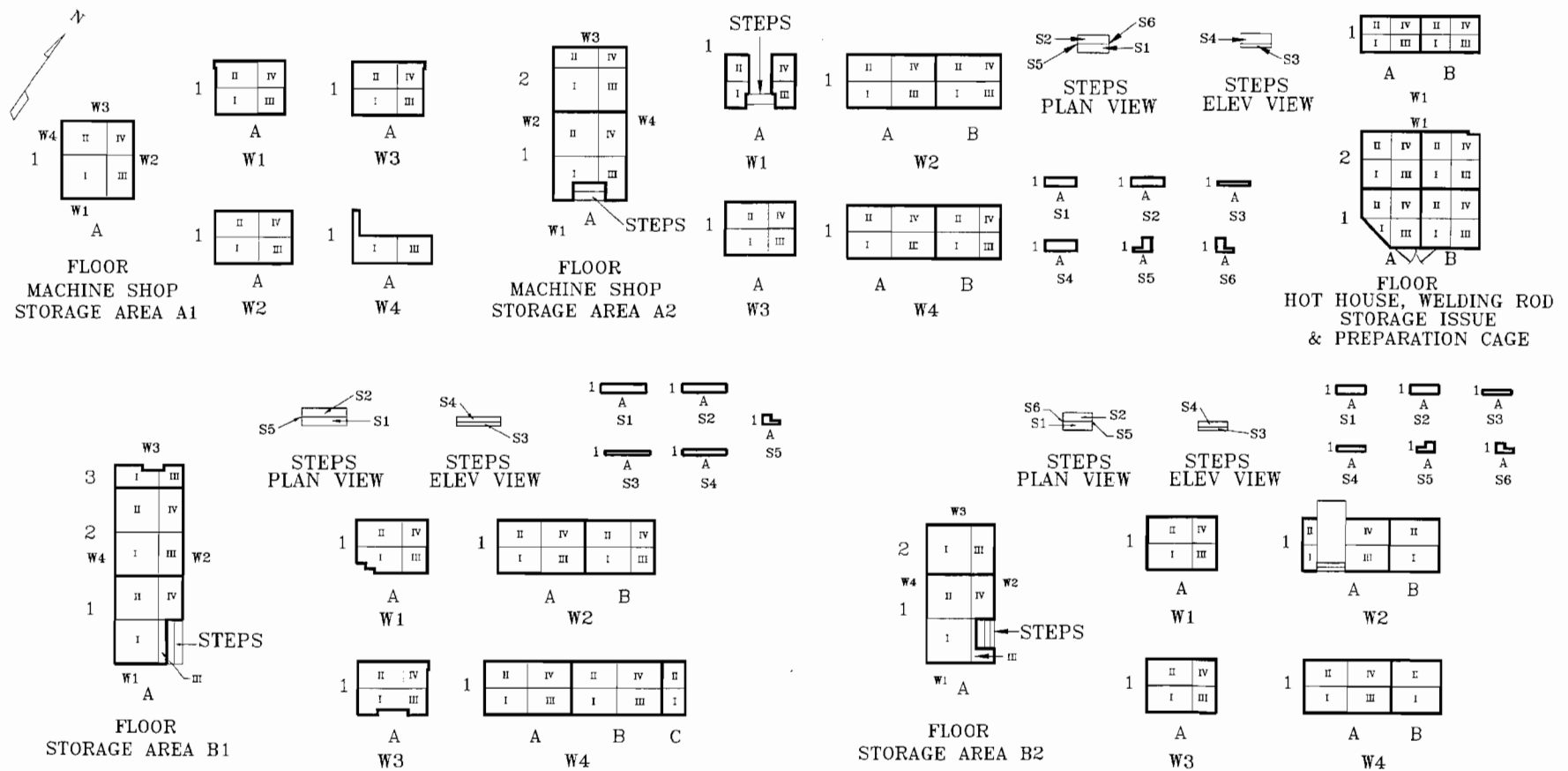
e. Site Map, Class B



CNSY G-RAM FINAL REPORT

Section 7. Building 35

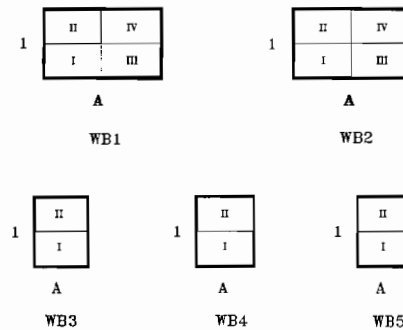
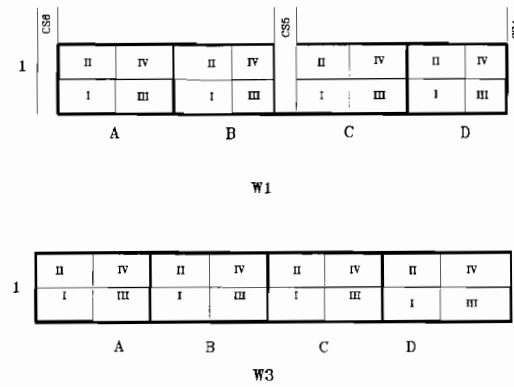
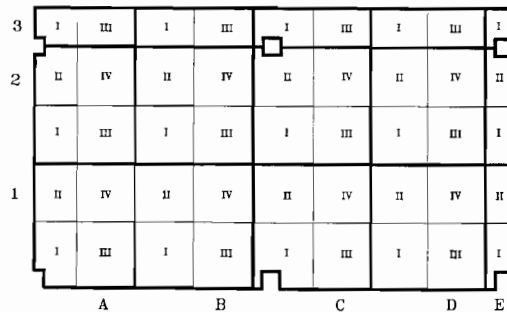
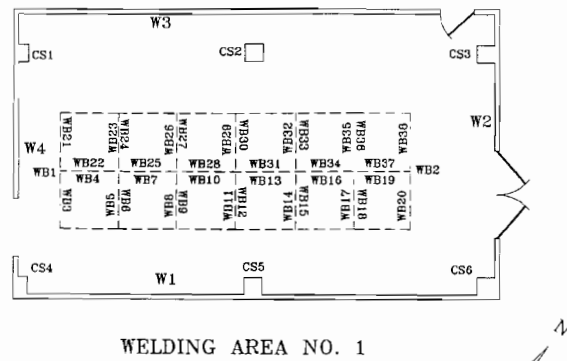
e. Overall Grid Map, Class B



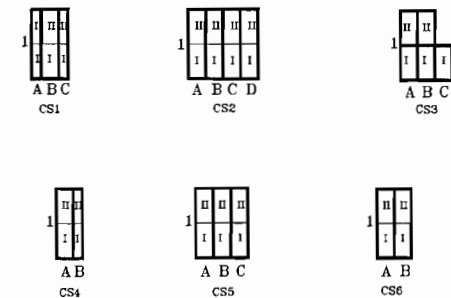
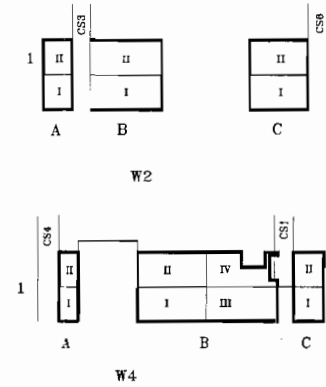
CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Overall Grid Map, Class B



TYPICAL WELDING AREA #1 WELDING BOOTH
WALL CONFIGURATION (WB6 - WB38)

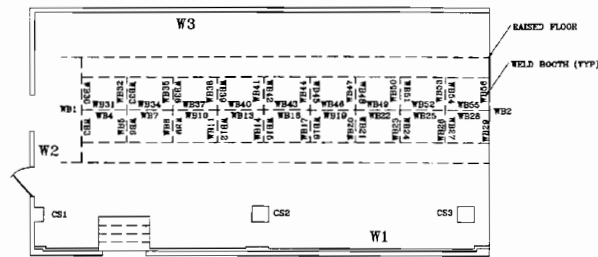


COLUMN DETAILS

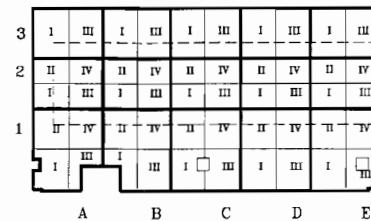
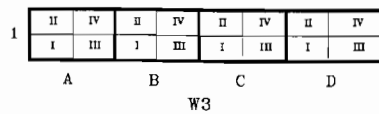
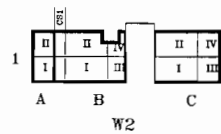
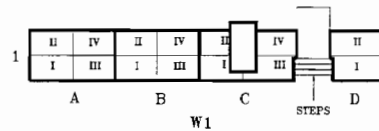
CNSY G-RAM FINAL REPORT

Section 7. Building 35

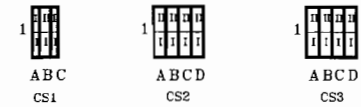
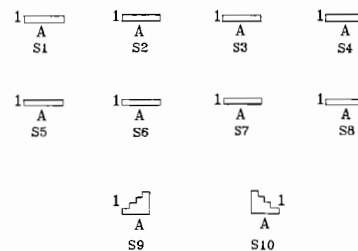
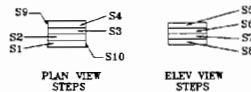
e. Overall Grid Map, Class B



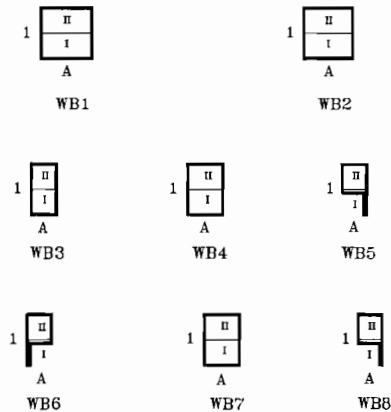
WELDING AREA NO. 2



FLOOR

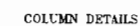


COLUMN DETAILS



TYPICAL WELDING AREA #2 WELDING BOOTH WALL CONFIGURATIONS (WB9 - WB56)

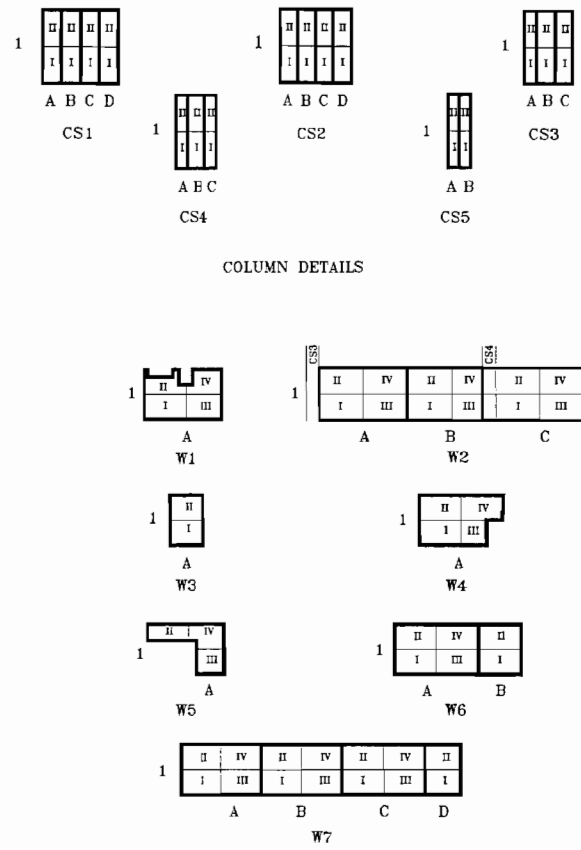
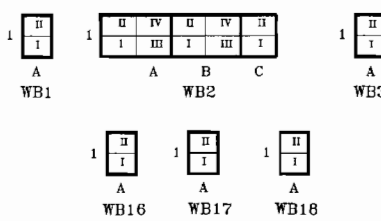
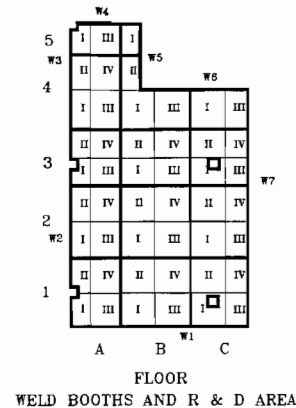
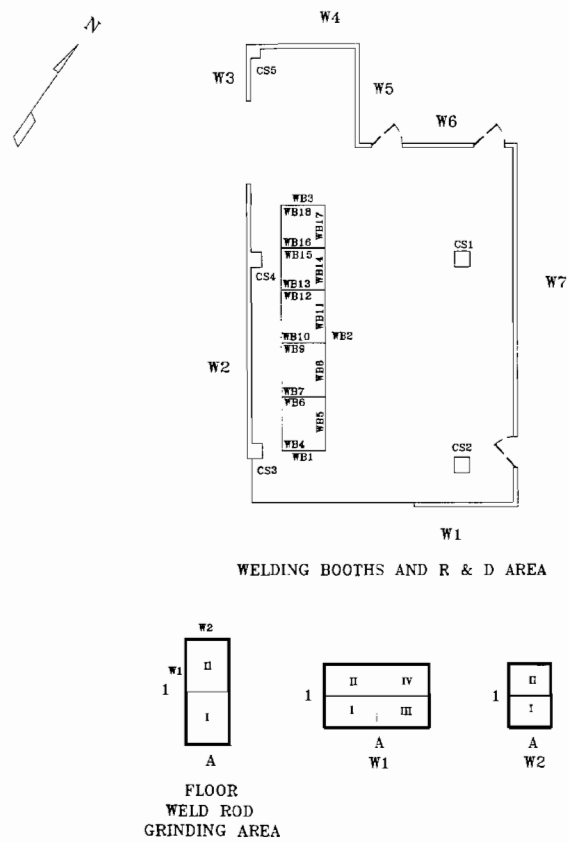
e. Overall Grid Map, Class B



CNSY G-RAM FINAL REPORT

Section 7. Building 35

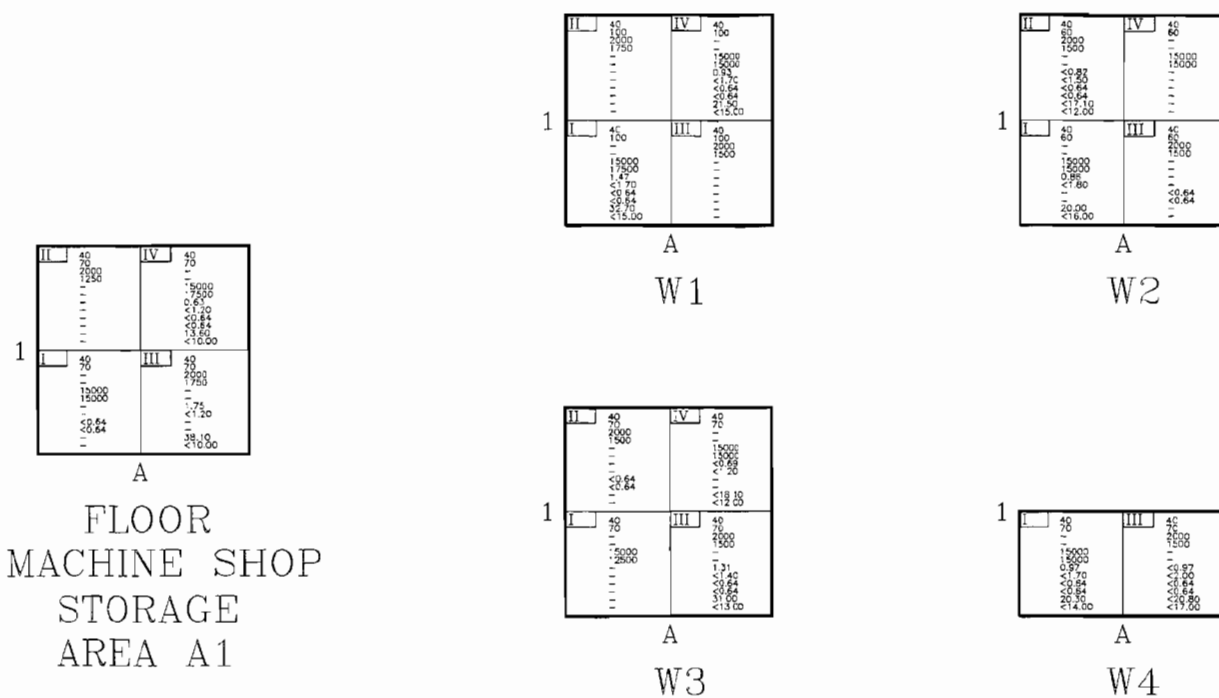
e. Overall Grid Map, Class B



CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



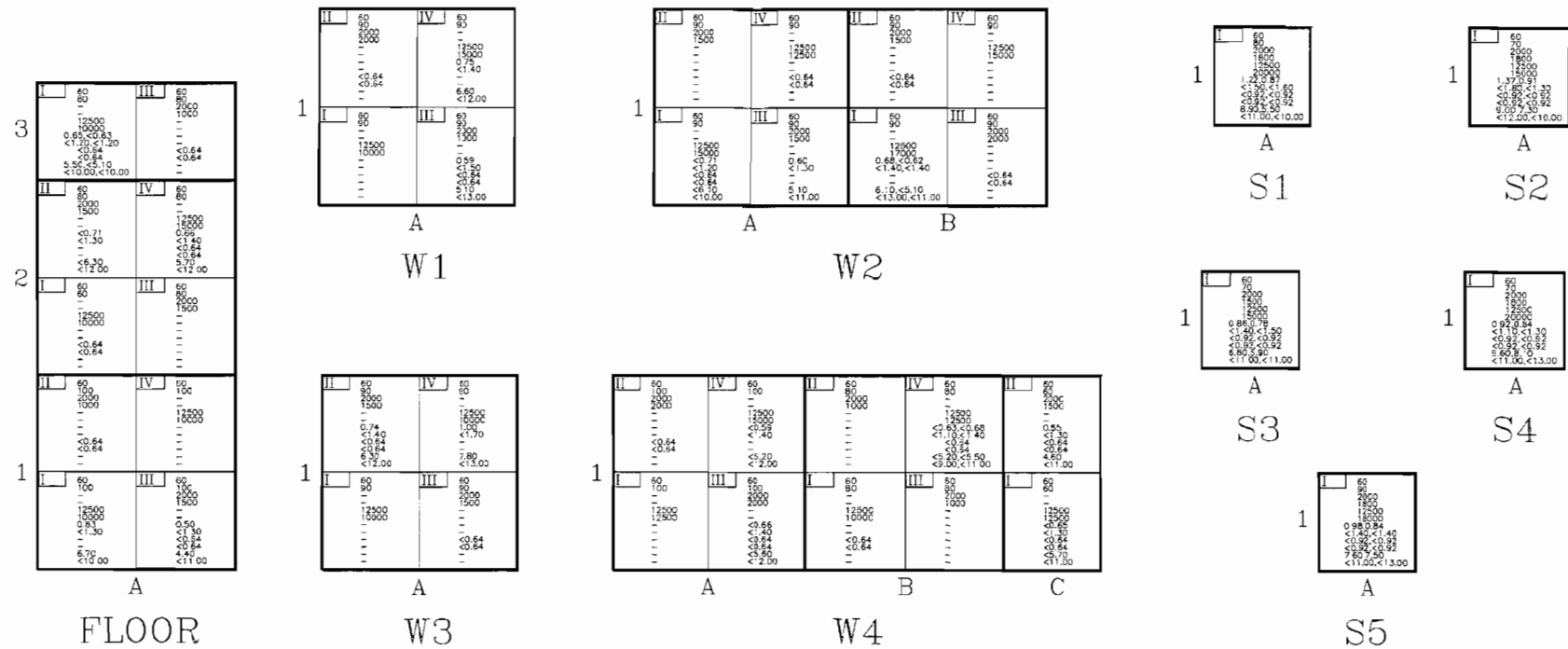
Data Legend:

1 - IM-247/PD [Bq]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PD [Bq]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <3
4 - IM-253/PD [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <30
5 - IM-253/PD [Bq]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PD [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



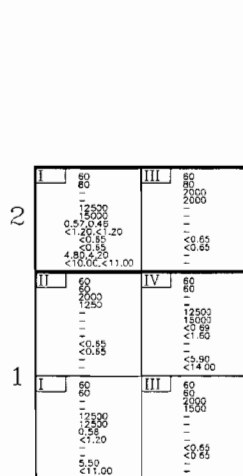
Data Legend:

- 1 - IM-247/PD [kg]
- 2 - IM-247/PD [g/m]
- 3 - IM-253/PD [V-1 PMA] [kg]
- 4 - IM-253/PD [V-1 PMA] [g/m]
- 5 - IM-253/PD [V-2 GROSS] [kg]
- 6 - IM-253/PD [V-2 GROSS] [g/m]
- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regular value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regular value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regular value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regular value: <30
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regular value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regular value: <450

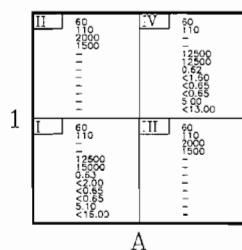
CNSY G-RAM FINAL REPORT

Section 7. Building 35

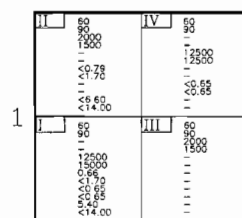
e. Localized Grid Map



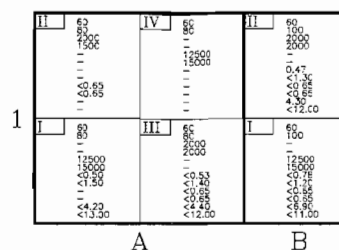
FLOOR
STORAGE
AREA B2



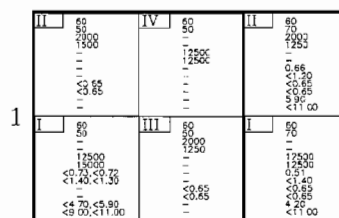
W1



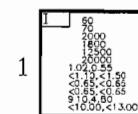
W3



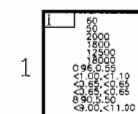
W2



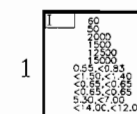
W4



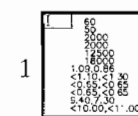
S1



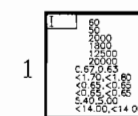
S2



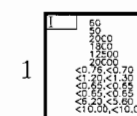
S3



S4



S5



S6

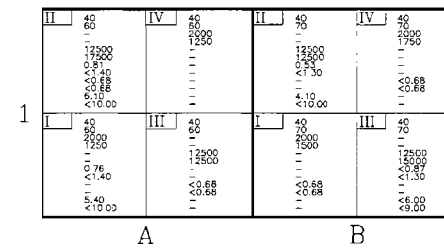
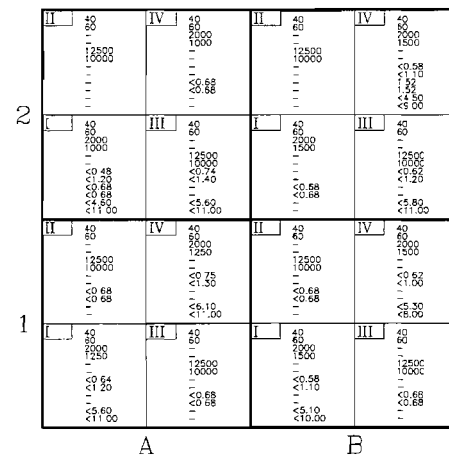
Data Legend:
1 - 1M-247/PD [Bq]
2 - 1M-247/PD [cpm]
3 - 1M-253/PD (HV-1 PHA) [Bq]
4 - 1M-253/PD (HV-1 PHA) [cpm]
5 - 1M-253/PD (HV-2 GROSS) [Bq]
6 - 1M-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <45

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



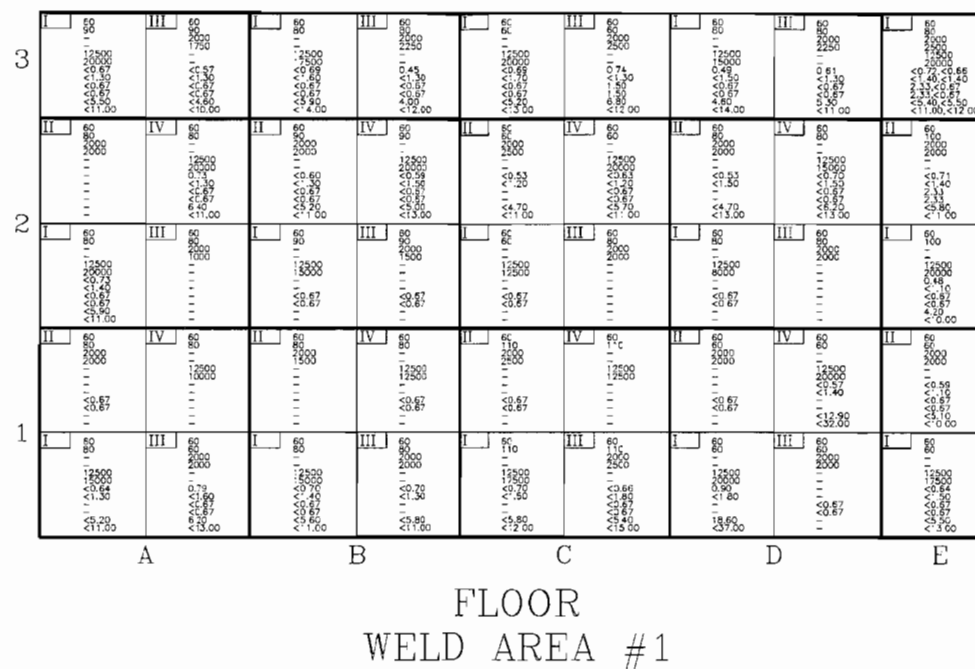
FLOOR
HOT HOUSE, WELDING ROD
STORAGE, ISSUE & PREP CAGE

Data Legend:
1 - IM-247/PO [bkg.]
2 - IM-247/PO [cpm]
3 - IM-253/PO (HV-1 PHA) [bkg.]
4 - IM-253/PO (HV-1 PHA) [cpm]
5 - IM-253/PO (HV-2 GROSS) [bkg.]
6 - IM-253/PO (HV-2 GROSS) [cpm]
7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map

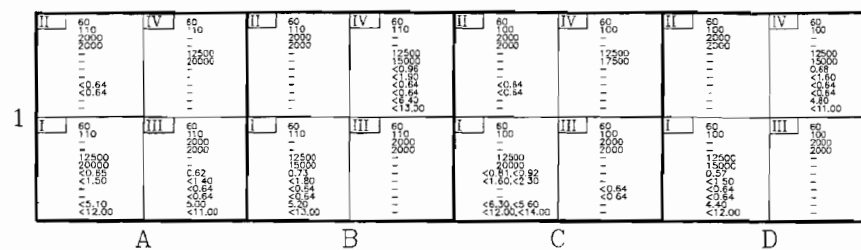


Data Legend:

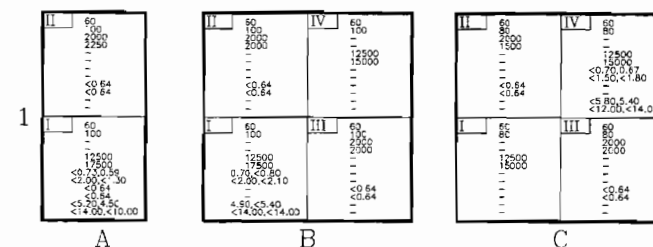
1 - M-247/PD [bq]	7 - Re-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Tl-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-223/PD (HV-1 PRA) [bq]	9 - Re-226 Removable Radioactivity [pCi/100cm ²], Regulator value: <3
4 - IM-223/PD (HV-1 PRA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²], Regulator value: <30
5 - IM-223/PD (HV-2 GROSS) [bq]	11 - Re-226 Surface Radioactivity [pCi/100cm ²], Regulator value: <45
6 - IM-223/PD (HV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²], Regulator value: <450

Section 7. Building 35

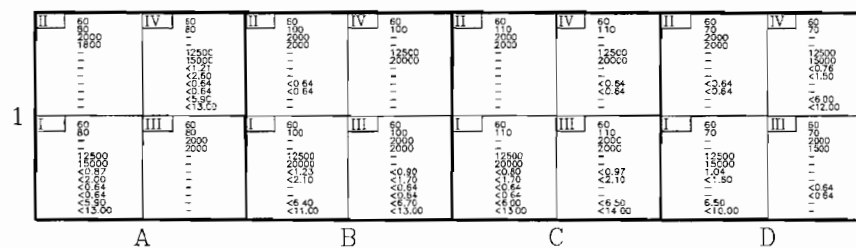
e. **Localized Grid Map, Welding Area No. 1**



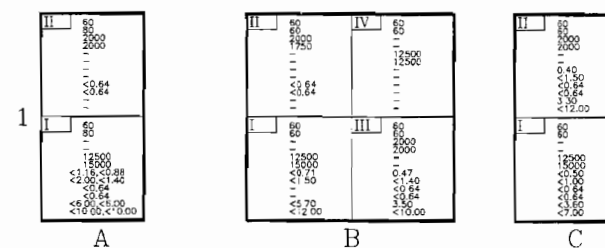
W 1



W2



W3



W4

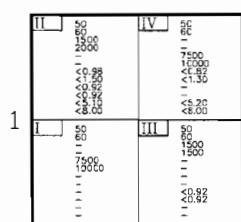
Data Legend:		
1	IM-247/PO	[bk _g]
2	IM-247/PO	[cpm]
3	IM-253/PO	[H ₂ O] [bk _g]
4	IM-253/PO	[H ₂ O] [cpm]
5	IM-253/PO	[GRSS] [bk _g]
6	IM-253/PO	[GRSS] [cpm]
7	IR-226	Solid Sample Radioactivity [pCi/g] Regular value: <5 above bk _g of 2.2 pCi/g
8	IR-232	Solid Sample Radioactivity [pCi/g] Regular value: <5 above bk _g of 3.2 pCi/g
9	IM-228	Removable Radioactivity [pCi/100cm ²] Regular value: <5
10	IR-232	Removable Radioactivity [pCi/100cm ²] Regular value: <50
11	IR-226	Surface Radioactivity [pCi/100cm ²] Regular value: <50
12	IR-232	Surface Radioactivity [pCi/100cm ²] Regular value: <450

e. **Localized Grid Map, Welding Area No. 1**

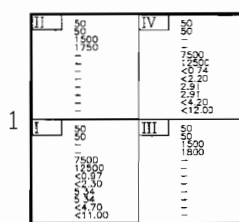
CNSY G-RAM FINAL REPORT

Section 7. Building 35

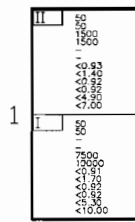
e. Localized Grid Map, Welding Area No. 1



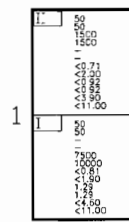
WB1



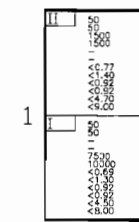
WB2



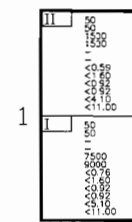
WB3



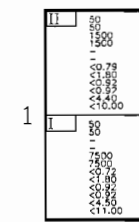
WB4



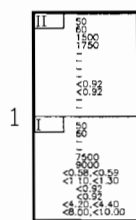
WB5



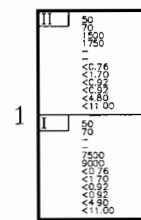
WB6



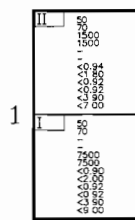
WB7



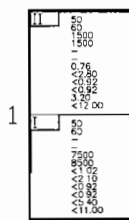
WB8



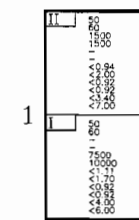
WB9



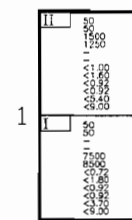
WB10



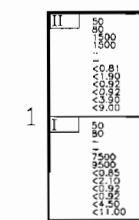
WB11



WB12



WB13



WB14

Data Legend:
 1 - IM-247/PO [bkg]
 2 - IM-247/PO [cpm]
 3 - IM-253/PO (HV-1 PHA) [bkg]
 4 - IM-253/PO (HV-1 PHA) [cpm]
 5 - IM-253/PO (HV-2 GROSS) [bkg]
 6 - IM-253/PO (HV-2 GROSS) [cpm]
 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

e. **Localized Grid Map, Welding Area No. 1**

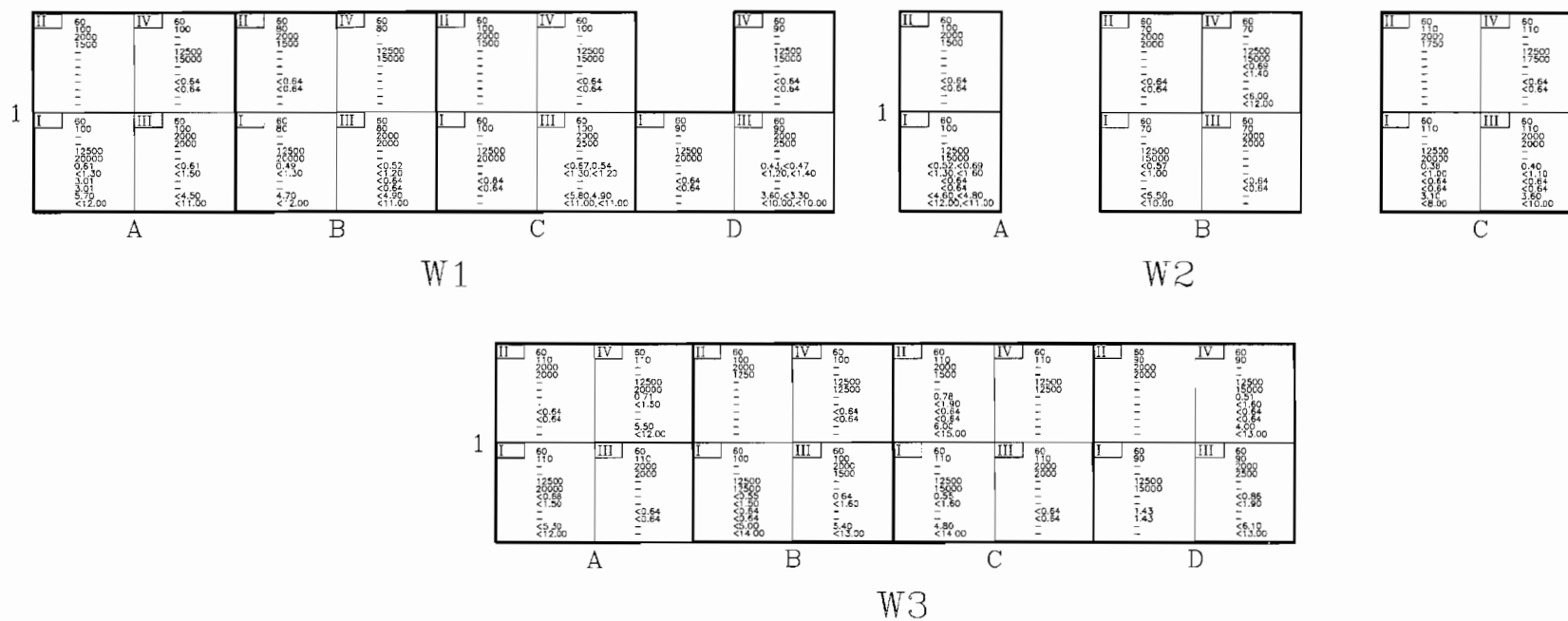
A
WB38

7 - Re-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Re-226 Removable Radioactivity [pCi/100cm²]: Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regulator value: <50
11 - Re-226 Surface Radioactivity [pCi/100cm²]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regulator value: <45G

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map, Welding Area No. 2



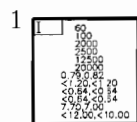
Data Legend

- 1 - W-247/PO [Bq/L]
- 2 - W-247/PO [cpm]
- 3 - W-253/PO HV-1 PHA [Bq/L]
- 4 - W-253/PO HV-1 PHA [cpm]
- 5 - W-253/PO HV-2 GROSS [Bq/L]
- 6 - W-253/PO HV-2 GROSS [cpm]
- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <45

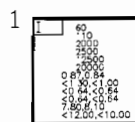
CNSY G-RAM FINAL REPORT

Section 7. Building 35

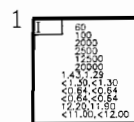
e. Localized Grid Map, Welding Area No. 2



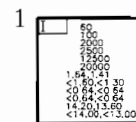
A
S1



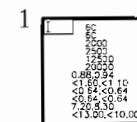
A
S2



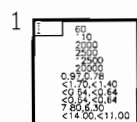
A
S3



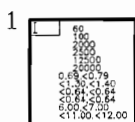
A
S4



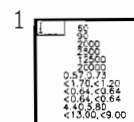
A
S5



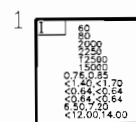
A
S6



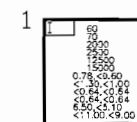
A
S7



A
S8



A
S9



A
S10

Data Legend:

1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-253/PD [bkg.]
4 - IM-253/PD [cpm]
5 - IM-253/PD [v-2 GROSS] [bkg.]
6 - IM-253/PD [v-2 GROSS] [cpm]

7 - Re-226 Solid Sample Radioactivity [pCi/g]. Regulator value <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value <2 above bkg. of 3.2 pCi/g
9 - Re-226 Removable Radioactivity [pCi/100cm²]. Regulator value <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value <90
11 - Re-226 Surface Radioactivity [pCi/100cm²]. Regulator value <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value <450

Section 7. Building 35

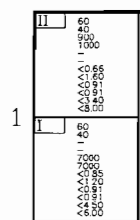
e. **Localized Grid Map, Welding Area No. 2**

7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]: Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regulator value: <450

CNSY G-RAM FINAL REPORT

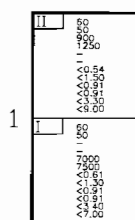
Section 7. Building 35

e. Localized Grid Map, Welding Area No. 2



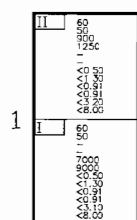
A

WB13



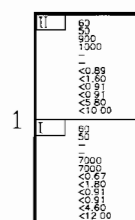
A

WB14



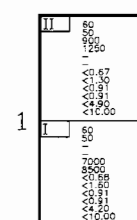
A

WB15



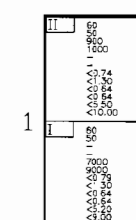
A

WB16



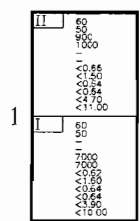
A

WB17



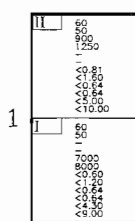
A

WB18



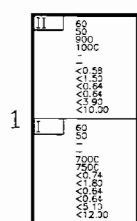
A

WB19



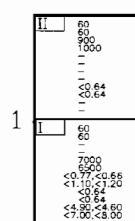
A

WB20



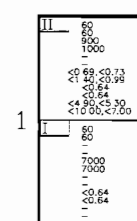
A

WB21



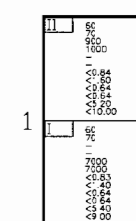
A

WB22



A

WB23



A

WB24

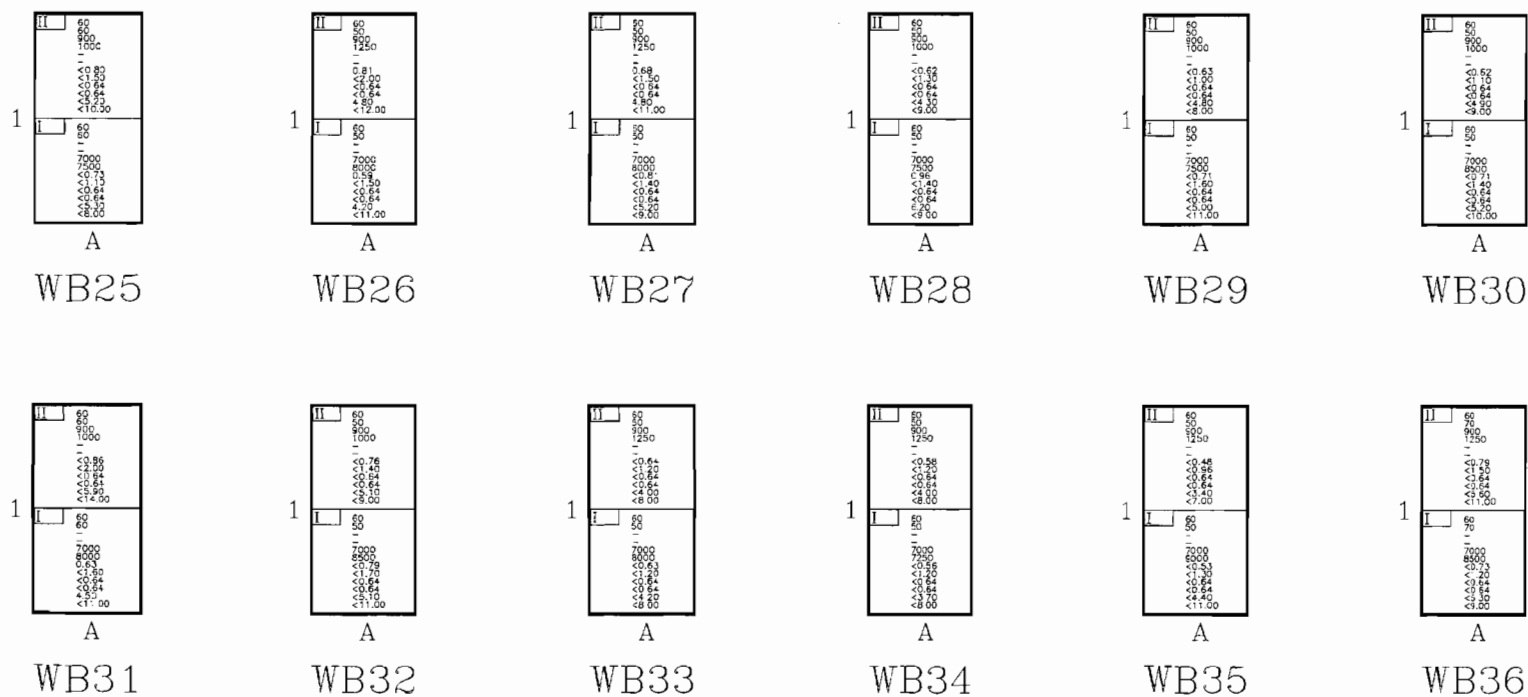
Data Legend:

- 1 - IM-247/PD [bkg]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD [bkg]
- 4 - IM-253/PD [cpm]
- 5 - IM-253/PD [bkg]
- 6 - IM-253/PD [cpm]
- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map, Welding Area No. 2



Data Legend

1 - N-247/PD [Bq/g]

2 - N-247/PD [cpm]

3 - N-253/PD (V-1) PMA [Bq/g]

4 - N-253/PD (V-1) PMA [cpm]

5 - N-253/PD (V-2) GROSS [Bq/g]

6 - N-253/PD (V-2) GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 23 pCi/g

8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 32 pCi/g

9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <9

10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <90

11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45

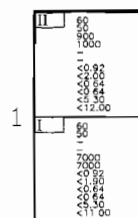
12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

e. **Localized Grid Map, Welding Area No. 2**

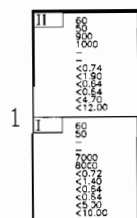
CNSY G-RAM FINAL REPORT

Section 7. Building 35

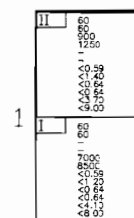
e. Localized Grid Map, Welding Area No. 2



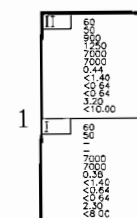
WB49



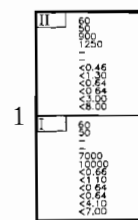
WB50



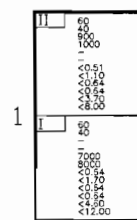
WB51



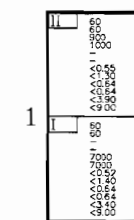
WB52



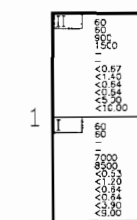
WB53



WB54



WB55



WB56

Data Legend:

- 1 - IM-247/PD [Bq]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV=1 PHA) [Bq]
- 4 - IM-253/PD (HV=1 PHA) [cpm]
- 5 - IM-253/PD (HV=2 GROSS) [Bq]
- 6 - IM-253/PD (HV=2 GROSS) [cpm]

- 7 - Re-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above Bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above Bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <50
- 11 - Re-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

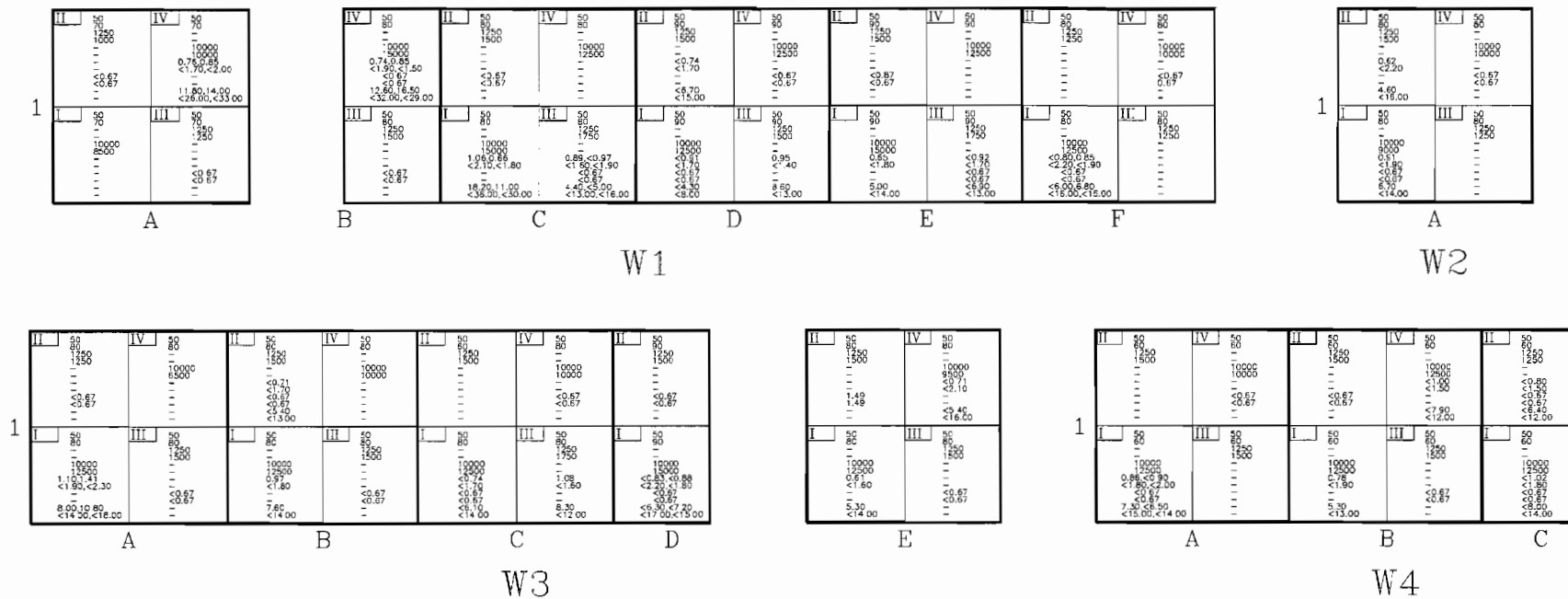
e. **Localized Grid Map, Welding Area No. 2**

55

CNSY G-RAM FINAL REPORT

Section 7. Building 35

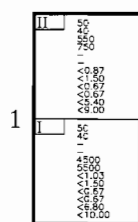
e. Localized Grid Map, Welding Area No. 3



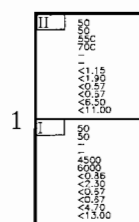
Data Legend:
 1 - IM-247/P3 [bkg]
 2 - IM-247/P3 [cpm]
 3 - IM-253/P3 (H-1) [bkg]
 4 - IM-253/P3 (H-1) [cpm]
 5 - IM-253/P3 (H-2) GROSS [bkg]
 6 - IM-253/P3 (H-2) GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 23 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <4
 10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <50
 11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

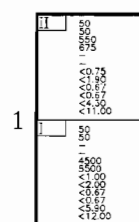
Section 7. Building 35



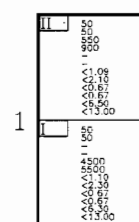
WB5



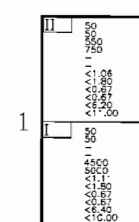
A
WB6



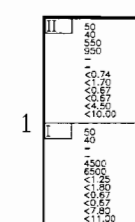
A
WB7



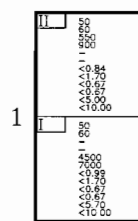
WB8



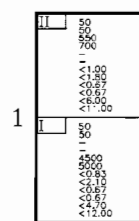
WB9



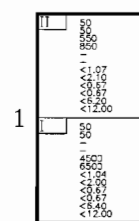
A
WB10



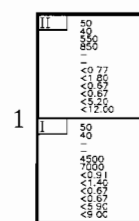
WB11



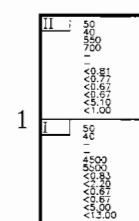
A
WB12



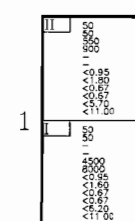
A
WB13



A
WB14



WB15



A
WB16

Data Legend:

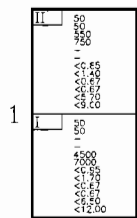
1 - M-247/PD [bkg.]
2 - M-247/PD [cpm]
3 - M-253/PD [HV-1 PHA] [bkg.]
4 - M-253/PD [HV-1 PHA] [cpm]
5 - M-253/PD [HV-2 GROSS] [bkg.]
6 - M-253/PD [HV-2 GROSS] [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]: Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]: Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]: Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]: Regulator value: <450

CNSY G-RAM FINAL REPORT

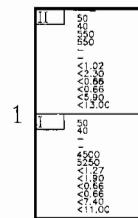
Section 7. Building 35

e. Localized Grid Map, Welding Area No. 3



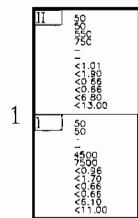
A

WB17



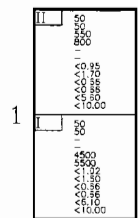
A

WB18



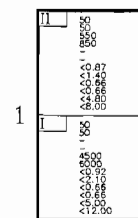
A

WB19



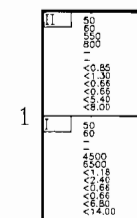
A

WB20



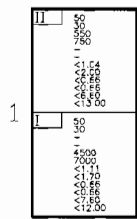
A

WB21



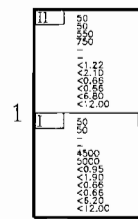
A

WB22



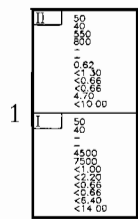
A

WB23



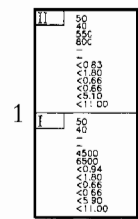
A

WB24



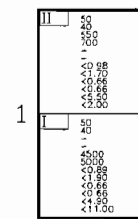
A

WB25



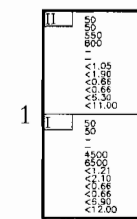
A

WB26



A

WB27



A

WB28

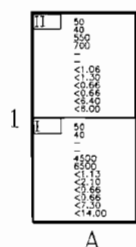
Data Legend:
1 - 1M-247/PD [Bkg]
2 - 1M-247/PD [cpm]
3 - 1M-253/PD (HV-1) [Bkg]
4 - 1M-253/PD (HV-1) [cpm]
5 - 1M-253/PD (HV-2) [Bkg]
6 - 1M-253/PD (HV-2) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

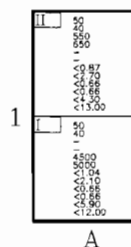
CNSY G-RAM FINAL REPORT

Section 7. Building 35

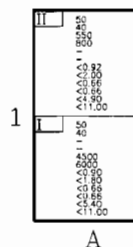
e. Localized Grid Map, Welding Area No. 3



WB29



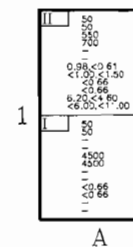
WB30



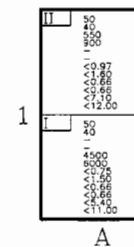
WB31



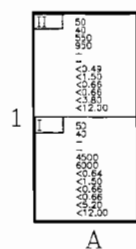
WB32



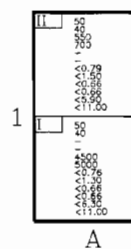
WB33



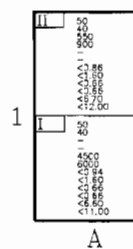
WB34



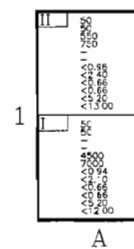
WB35



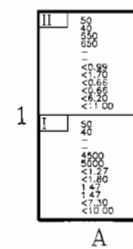
WB36



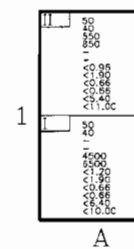
WB37



WB38



WB39



WB40

Data Legend:

1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-247/PD [cpm] PHA [bkg.]
4 - IM-252/PD (HV-1 PHA) [cpm]
5 - IM-252/PD (HV-2 CROSS) [bkg.]
6 - IM-252/PD (HV-2 CROSS) [cpm]

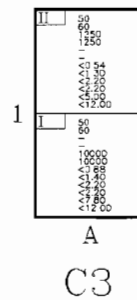
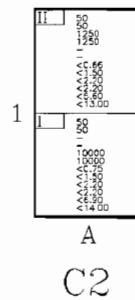
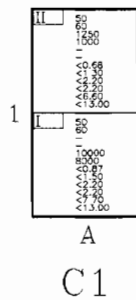
7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <10
11 - Re-226 Surface Radioactivity [pCi/30cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

e. **Localized Grid Map, Welding Area No. 3**

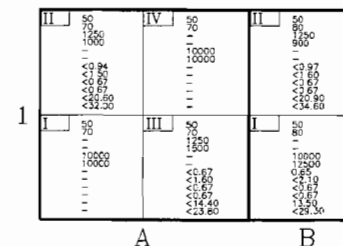
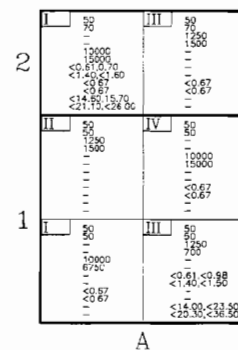
CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map



FLOOR ROOM K WELDING AREA #3



Data Legend:
 1 - IM-247/PD [dkg]
 2 - IM-247/PD [cpm]
 3 - IM-247/PD [V-1] [dkg]
 4 - IM-247/PD [V-1] [cpm]
 5 - IM-247/PD [V-2] [dkg]
 6 - IM-247/PD [V-2] [cpm]
 7 - Ra-226 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g], Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²], Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²], Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²], Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²], Regulator value: <450

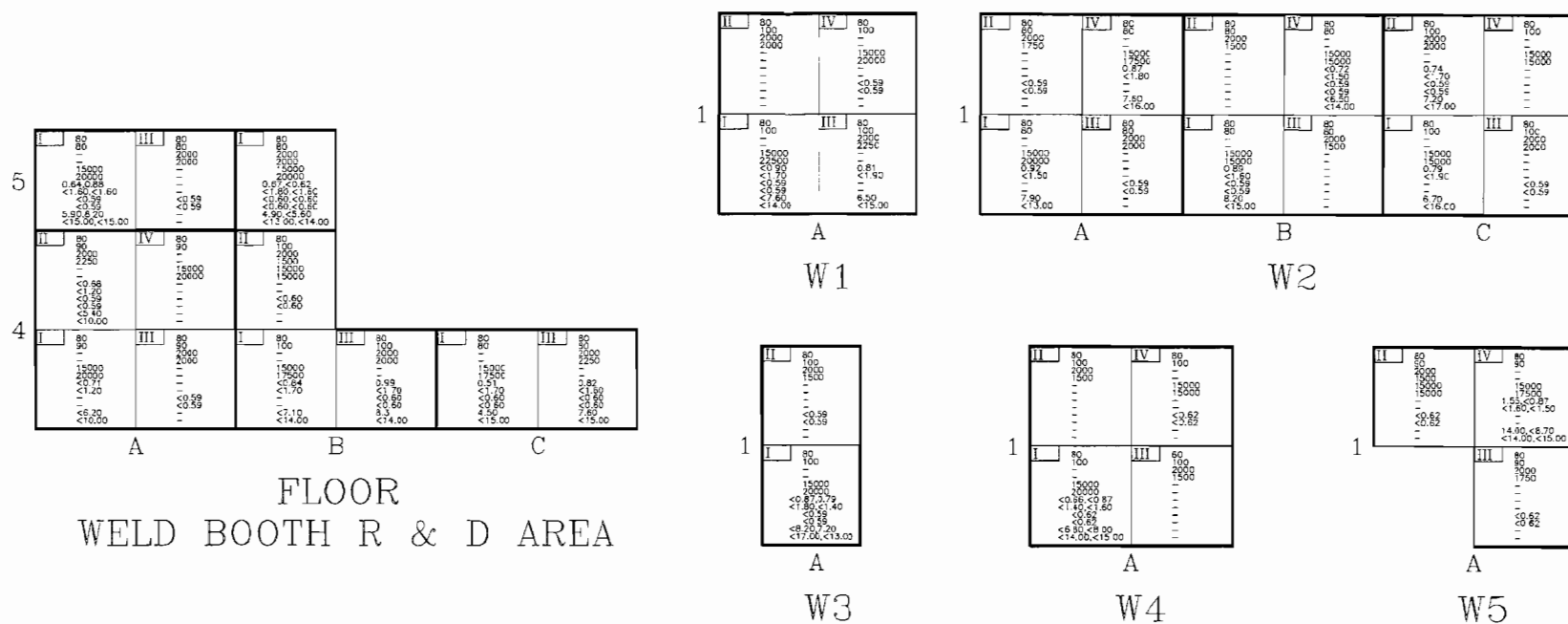
e. **Localized Grid Map**

63

CNSY G-RAM FINAL REPORT

Section 7. Building 35

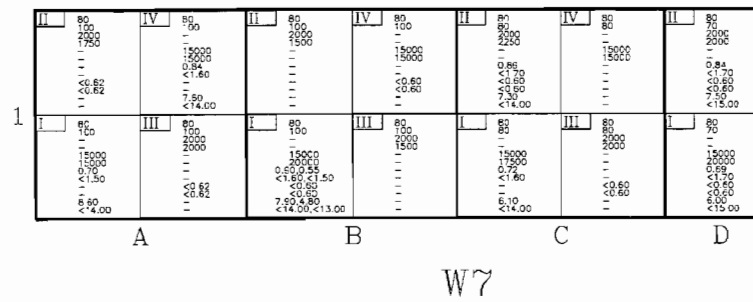
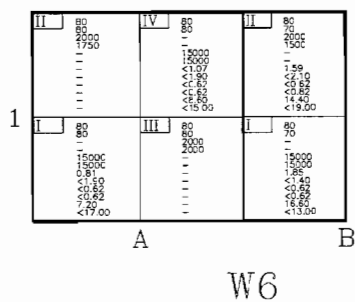
e. Localized Grid Map



Data Legend

- 1 - IM-247/PO [bkg]
- 2 - IM-247/PO [cpm]
- 3 - IM-253/PO (N-1 PHA) [bkg]
- 4 - IM-253/PO (N-1 PHA) [cpm]
- 5 - IM-253/PO (N-2 CROSS) [bkg]
- 6 - IM-253/PO (N-2 CROSS) [cpm]
- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <45

Section 7. Building 35

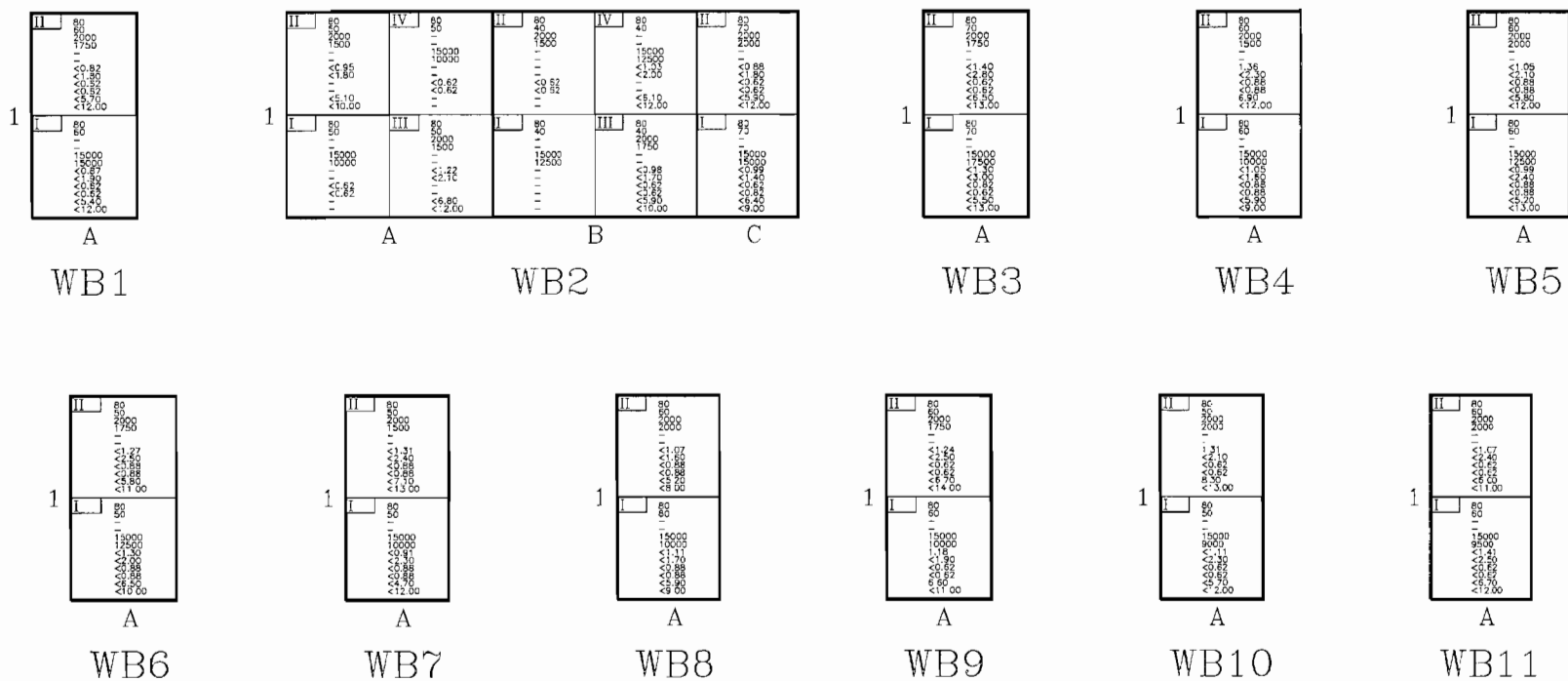


Data Legend:		
1	W-247/PD [bq]	7 - Re-228 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. at 2.3 pCi/g
2	W-467/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. at 3.2 pCi/g
3	W-253/PD (W-1 PhA) [bq]	9 - W-238 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4	W-253/PD (W-1 PhA) [cpm]	10 - W-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90
5	W-253/PD (W-2 GROSS) [cpm]	11 - W-238 Surface Radioactivity [pCi/100cm ²]; Regulator value: <50
6	W-253/PD (W-2 GROSS) [cpm]	12 - W-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

e. Localized Grid Map, Weld Booth R & D Area



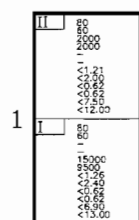
Data Legend:

- 1 - IM-247/PD [bkg.]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [bkg.]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [bkg.]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]
- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <50
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

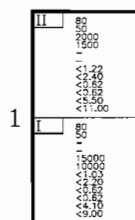
CNSY G-RAM FINAL REPORT

Section 7. Building 35

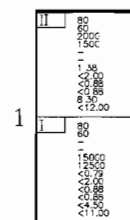
e. Localized Grid Map, Weld Booth R & D Area



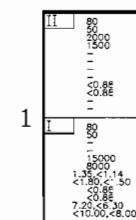
WB12



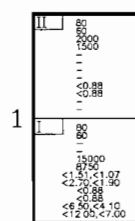
WB13



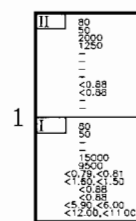
WB14



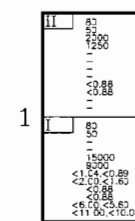
WB15



WB17



WB16



WB18

Data Legend:

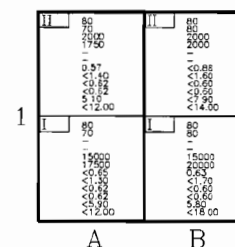
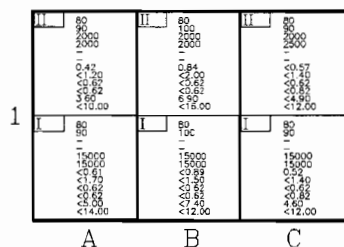
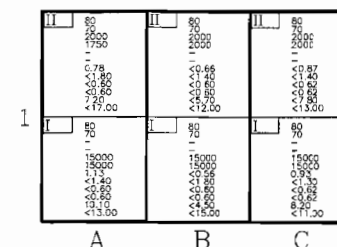
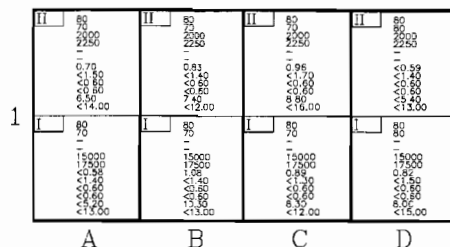
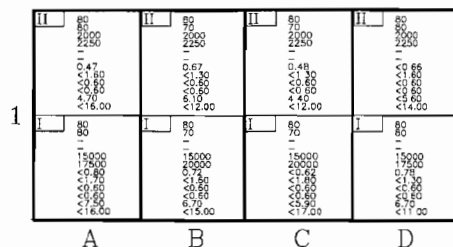
- 1 - IM-247/PD [bkg]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [bkg]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [bkg]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]

- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

CNSY G-RAM FINAL REPORT

Section 7. Building 35

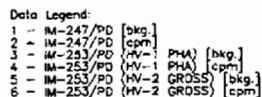
e. Localized Grid Map, Weld Booth R & D Area



Data Legend:
 1 - IM-247/PO [bkg.]
 2 - IM-247/PO [cpm]
 3 - IM-233/PO HV-1 PHA [bkg.]
 4 - IM-233/PO HV-1 PHA [cpm]
 5 - IM-233/PO HV-2 GROSS [pA]
 6 - IM-233/PO HV-2 GROSS [cpm]

7 - Pa-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

e. Localized Grid Map



69

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs

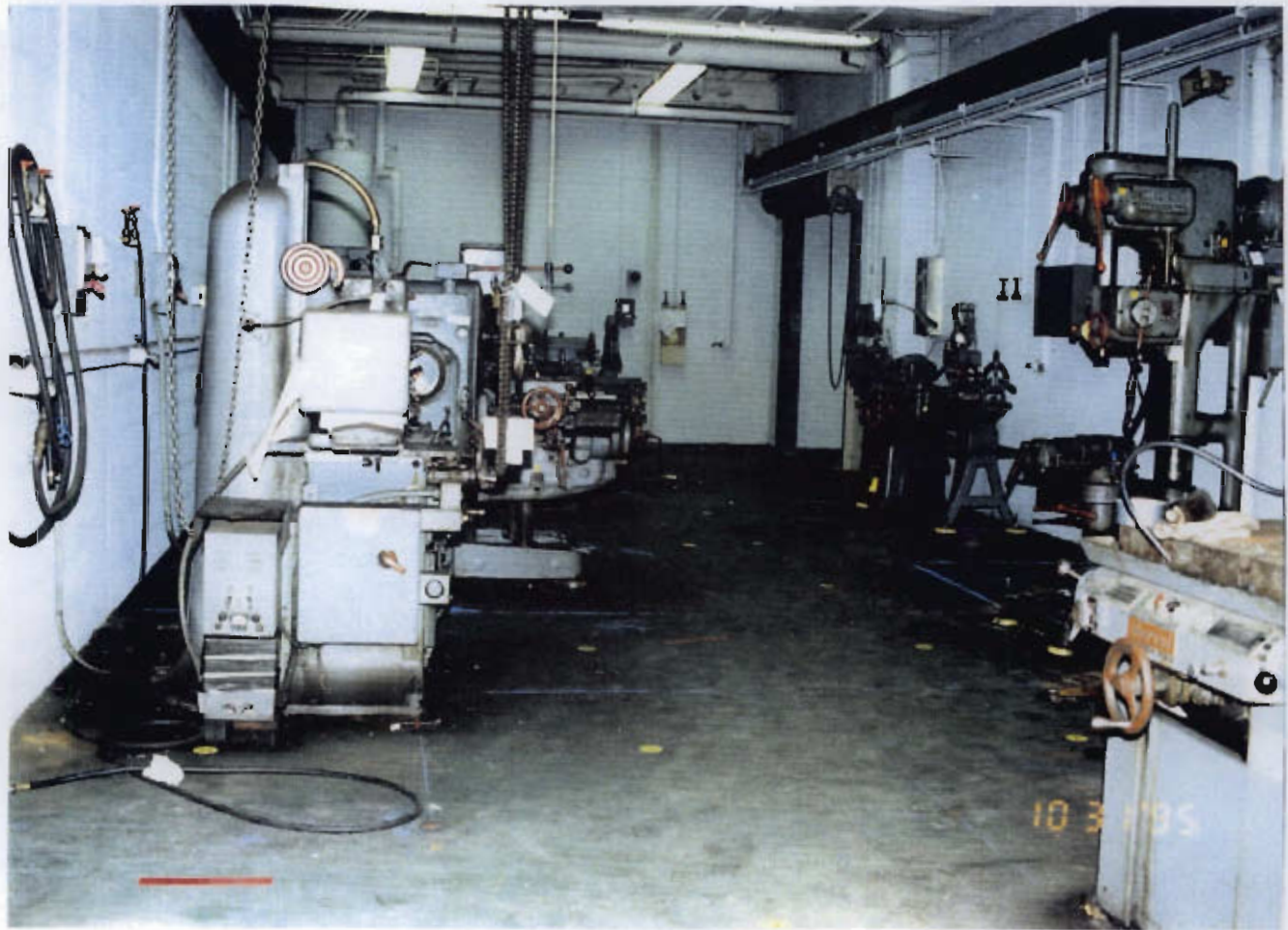


Machine Shop, viewing east.

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Section 7. Building 35

f. Photographs



Machine Shop, viewing south.

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Section 7. Building 35

f. Photographs



Evaluation Area, viewing east.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs



Etching Area, viewing east.

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Section 7. Building 35

f. Photographs

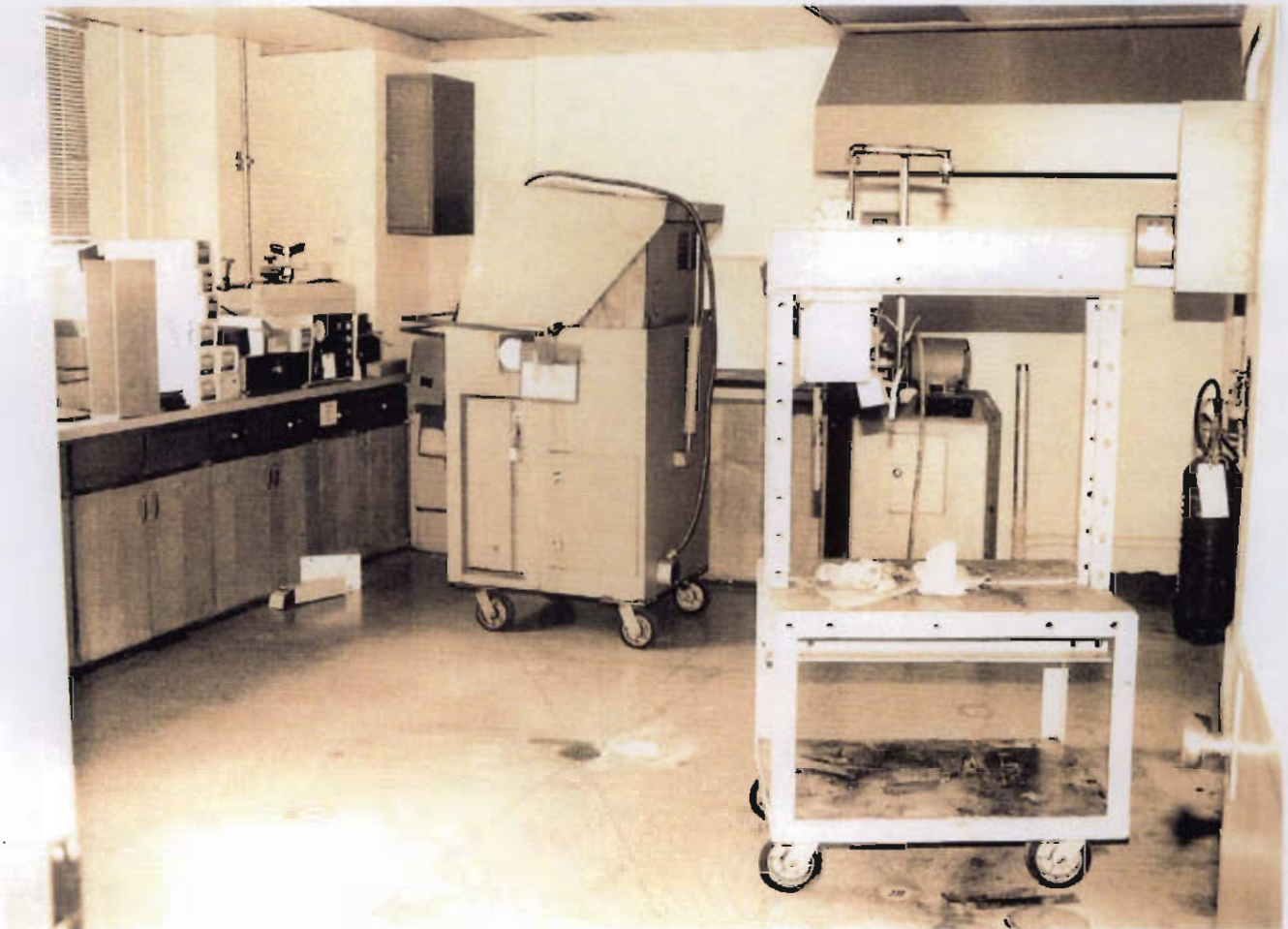


Etching Area Hall.

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Section 7. Building 35

f. Photographs



Sample Area, viewing south.

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Section 7. Building 35

f. Photographs



Welding Shop No. 1, viewing east.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs



Welding Shop No. 1, viewling west.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs



Welding Shop No. 2, viewing southeast.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs



Welding Shop No. 2, viewing west.

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Section 7. Building 35

f. Photographs



Storage Area A1.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs

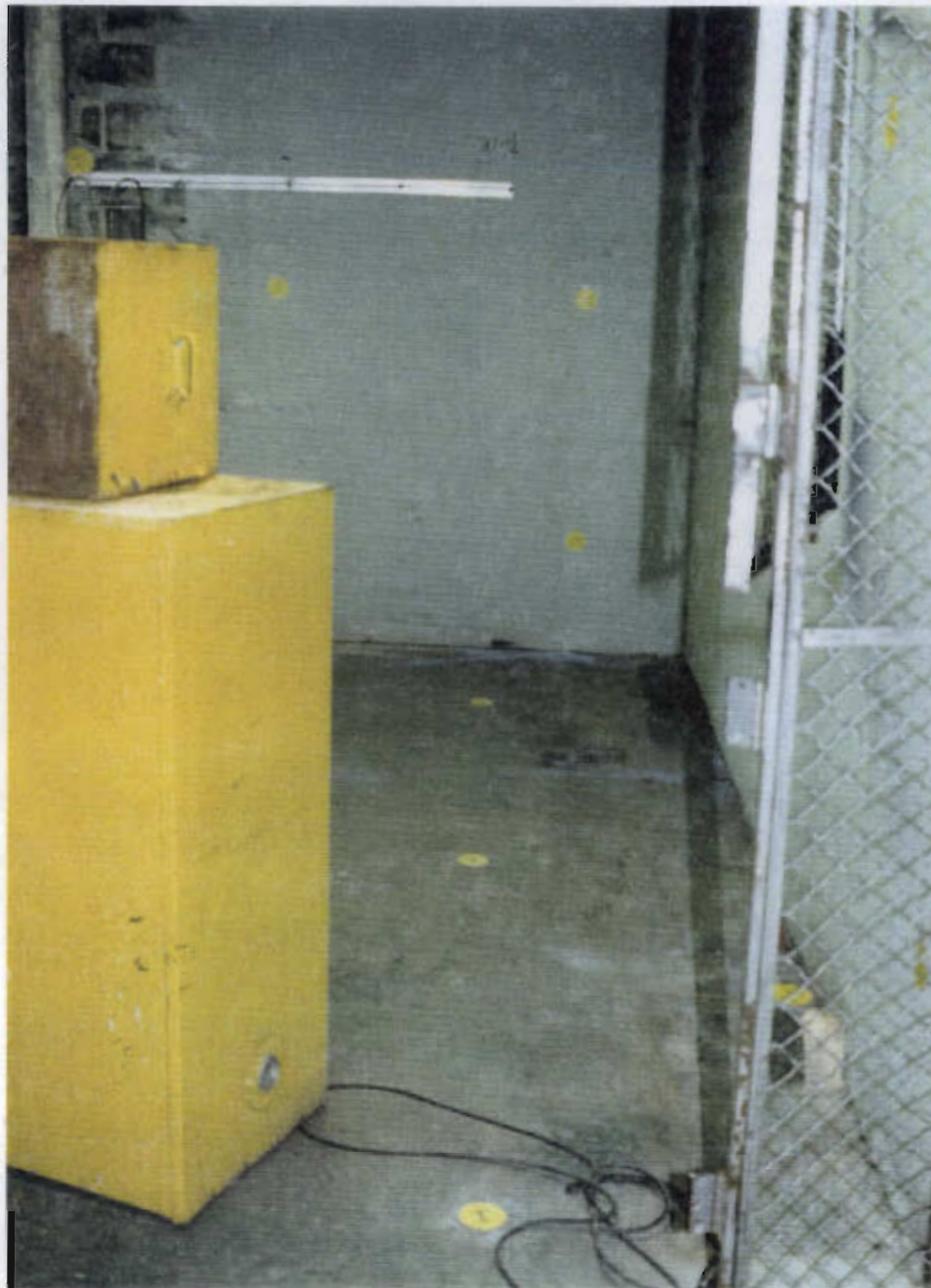


Storage Area A2.

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Section 7. Building 35

f. Photographs



Storage Area B1.

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Section 7. Building 35

f. Photographs



Storage Area B2.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs

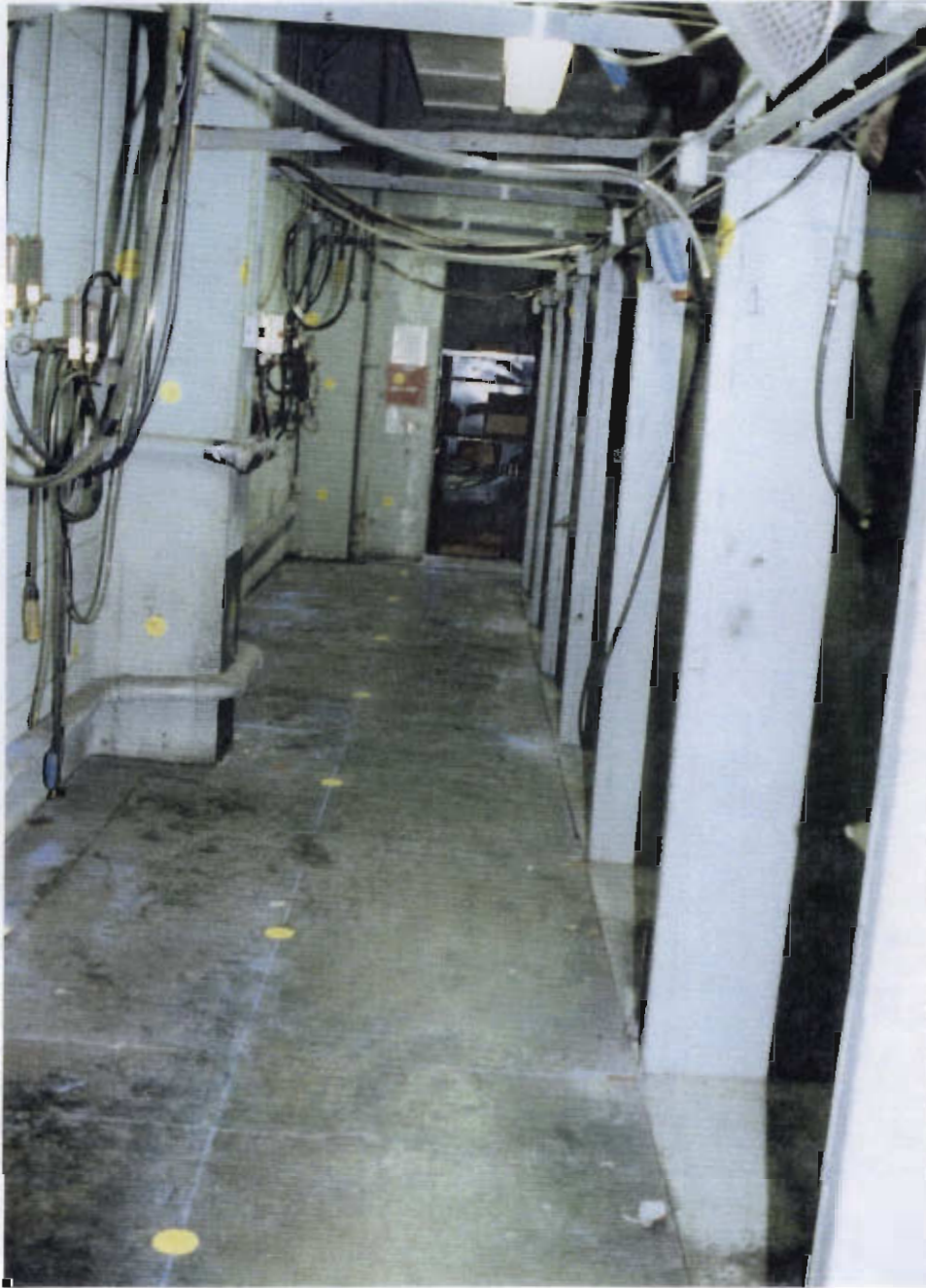


Hot House Welding Rod Storage, Issue and Prep. Cage, viewing north.

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Section 7. Building 35

f. Photographs



Welding Area No. 1, viewing east.

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Section 7. Building 35

f. Photographs

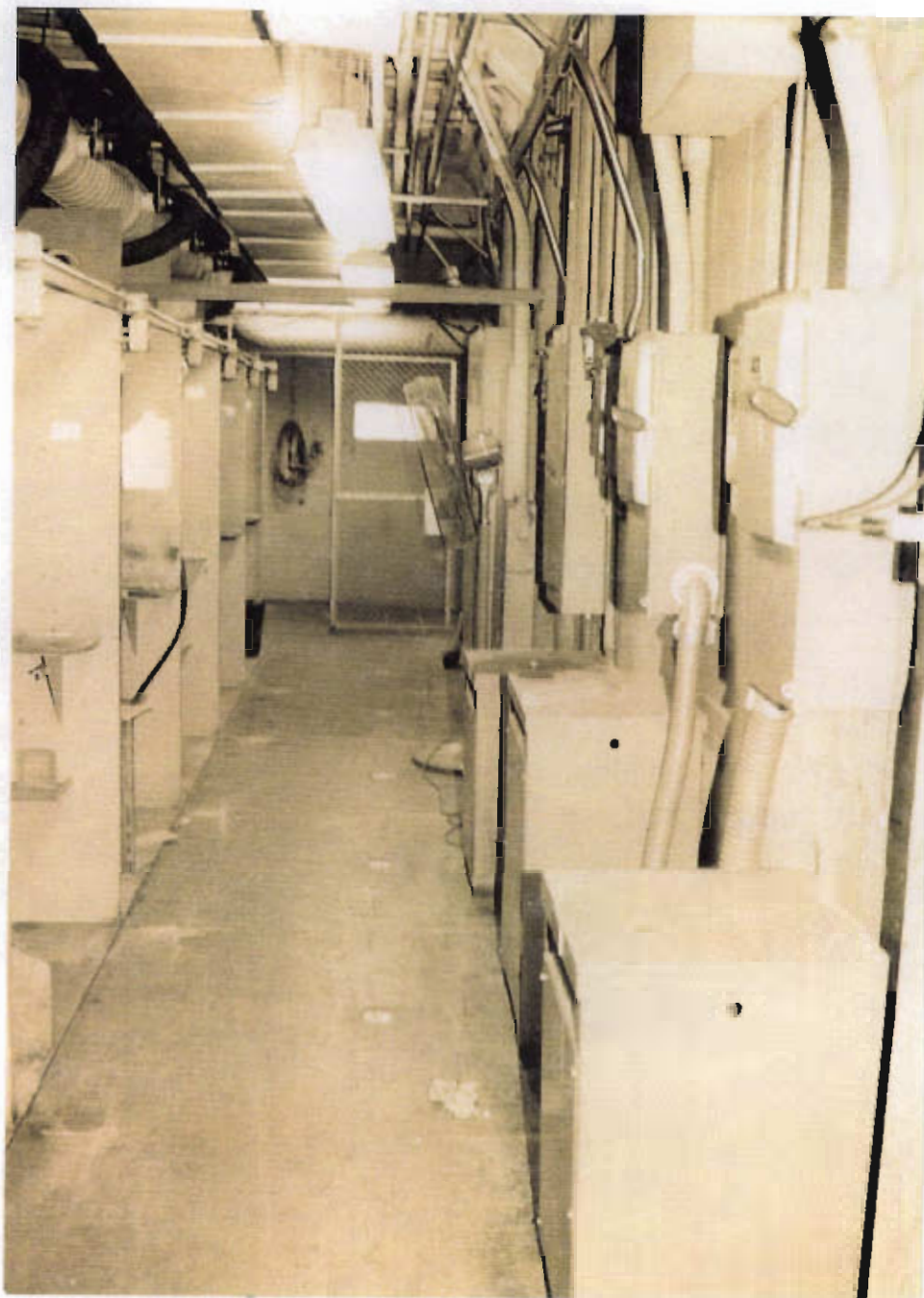


Welding Area No. 2, viewing east.

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Section 7. Building 35

f. Photographs



Welding Area No. 3, vlewing east.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs



R&D Area Welding Booths, viewing north.

CNSY G-RAM FINAL REPORT

Section 7. Building 35

f. Photographs



Weld Rod Grinding Area, viewing northeast.

CNSY G-RAM FINAL REPORT

Section 8. Building 44

a. Introduction:

Building 44 was constructed as a sheet metal shop and first appears on the 1939 annual installation map. It is oriented east to west off Hobson Avenue.

(1) Description:

Building 44 is a two-story building with a rectangular plan. The building is constructed of concrete. A one-story block addition is located at the northwestern corner of the building.

(2) Brief History:

- (a) Use:** Building 44, although originally constructed as a sheet metal shop, presently serves as a pre-expended item issue station and miscellaneous storage warehouse.
- (b) Radiological History:** Building 44 has one area that was surveyed. This specific site is the former Key Room on the second floor. On occasion, radium deck markers were stored in this room. Radiological history indicates that no known spills of radioactivity occurred and no loose surface contamination above the limit has been detected.

(3) Survey Requirements:

- (a)** Class A release survey.

b. Discussion:

The floor of Building 44, Key Room, was divided into two grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the

CNSY G-RAM FINAL REPORT

Section 8. Building 44

Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 44 Key Room were determined from similar materials located in an open storage bay directly adjacent (west) to the Key Room.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The alpha/beta analyzer results indicated the removable Ra-226 and Th-232 levels did not exceed 0.58 pCi/100 cm².

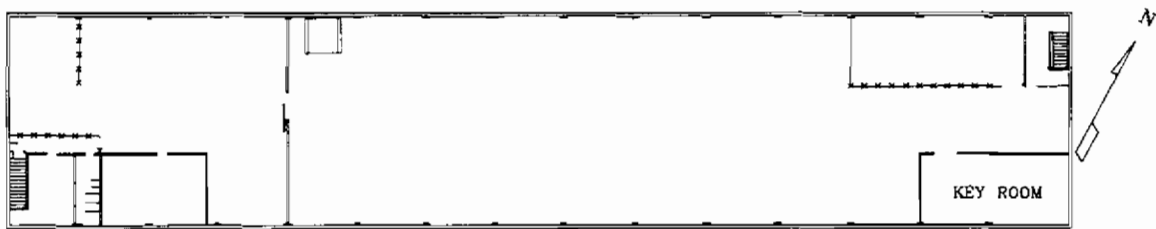
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 levels were less than the limit of 5 pCi/g. MCA analysis results indicated Ra-226 ranged from 0.81 pCi/g to less than 0.91 pCi/g and Th-232 ranged from less than 1.50 pCi/g to less than 1.80 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 levels were less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 levels were less than the limit of 450 pCi/100 cm². The mathematically computed results indicated Ra-226 ranged from 5.80 pCi/100 cm² to less than 6.50 pCi/100 cm² and Th-232 ranged from less than 11.00 pCi/100 cm² to less than 13.00 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 8. Building 44

d. Site Map

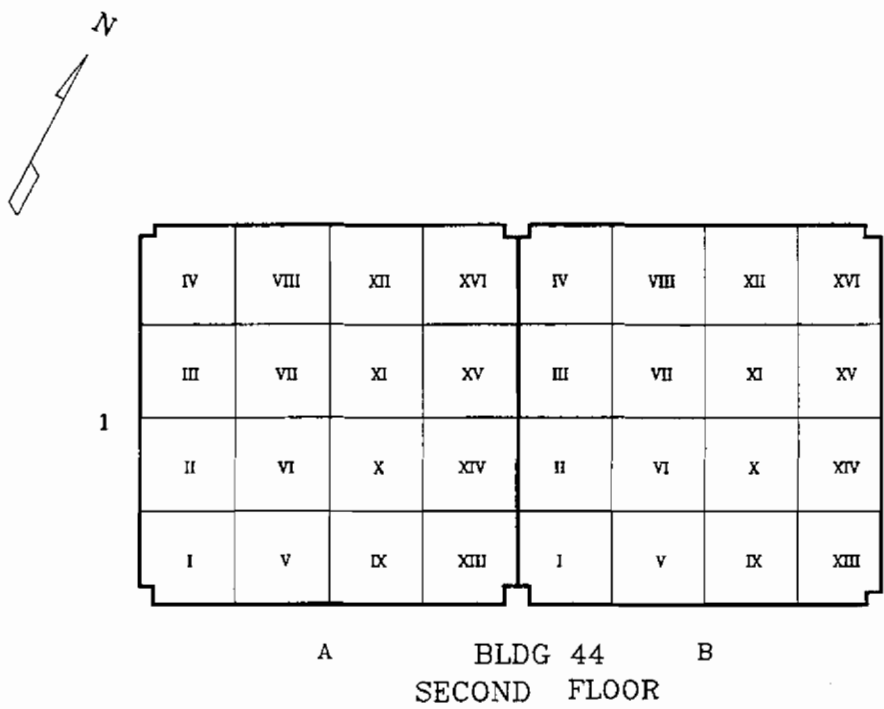


BUILDING 44: SECOND FLOOR

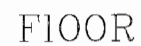
CNSY G-RAM FINAL REPORT

Section 8. Building 44

e. Overall Grid Map



e. **Localized Grid Map**



5

CNSY G-RAM FINAL REPORT

Section 8. Building 44

f. Photographs



Key Room

CNSY G-RAM FINAL REPORT

Section 8. Building 44

f. Photographs



Key Room

CNSY G-RAM FINAL REPORT

Section 9. Building 57

a. Introduction:

Building 57 was originally constructed as a rigging shop. Positioned from east to west, it is located on McMillan Avenue. The north facade abuts Building 44 with a one-story connector.

(1) Description:

Building 57 is a two-story industrial building with a rectangular plan. The building is constructed of concrete. Portions of the building have been converted to administrative offices.

(2) Brief History:

(a) **Use:** The specific survey site was the former RADIAC storage cage on the second floor.

(b) **Radiological History:** Radiological history indicates that no known spills of radioactivity occurred and no loose surface contamination above the limit has been detected.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of Building 57 RADIAC storage cage consisted of one grid approximately 20' by 20'. This grid was subdivided into approximately 5' by 5' sub-grids. The size and configuration of this site only allowed for seven sub-grids.

The grid and sub-grids were identified with unique designators.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific, therefore, entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

CNSY G-RAM FINAL REPORT

Section 9. Building 57

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from the grid. The solid material sample was removed from the grid location having the highest potential for radioactivity.

Background levels used in the RADIAC storage cage in Building 57 were determined from similar materials from the first floor of the Old Power House building 32.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The alpha/beta analyzer results indicated the removable Ra-226 and Th-232 levels did not exceed less than 0.52 pCi/100cm².

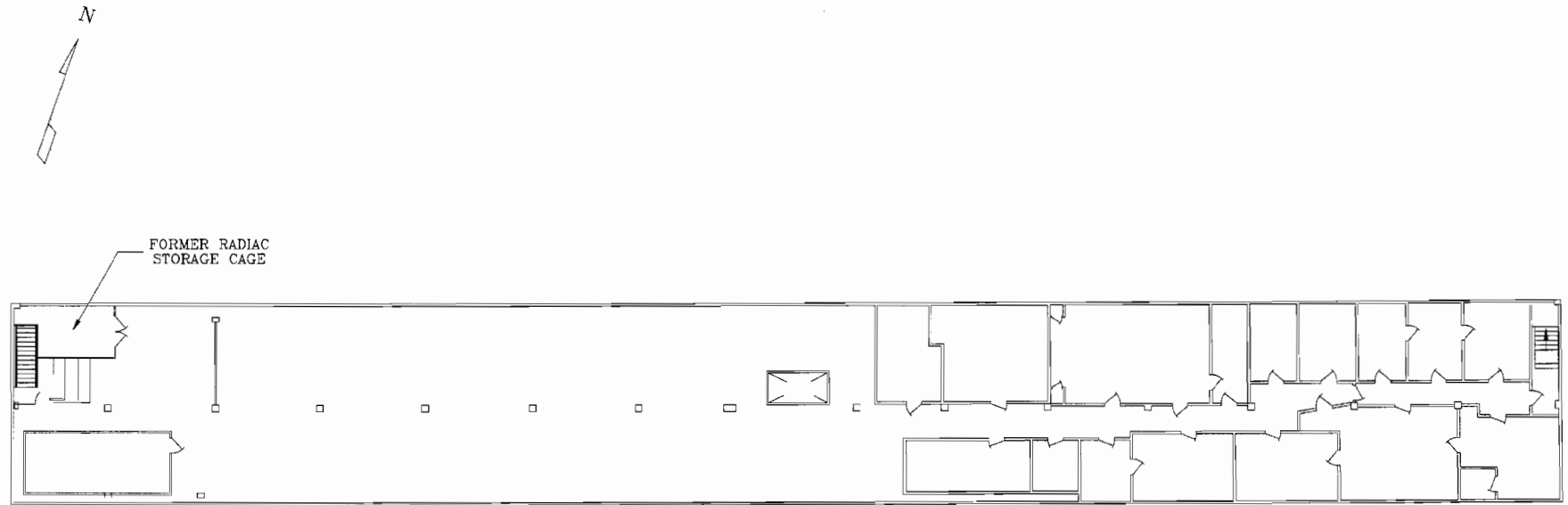
Analysis performed on the solid material sample with the multi-channel analyzer (MCA) indicated that the Ra-226 and Th-232 solid material sample was less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material sample was less than 0.39 pCi/g, and the Th-232 solid material sample was less than 0.72 pCi/g.

Mathematical computation of the specific radioactivity of the solid material sample confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 level was less than 11.70 pCi/100 cm², and the Th-232 level was less than 21.60 pCi/100 cm².

CNSY G-RAM FINAL REPORT

Section 9. Building 57

d. Site Map

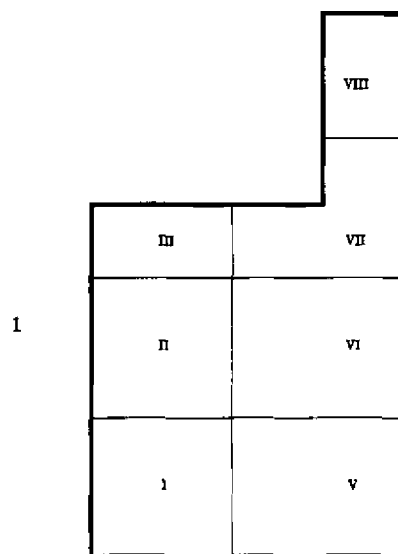


SECOND FLOOR

CNSY G-RAM FINAL REPORT

Section 9. Building 57

e. Overall Grid Map



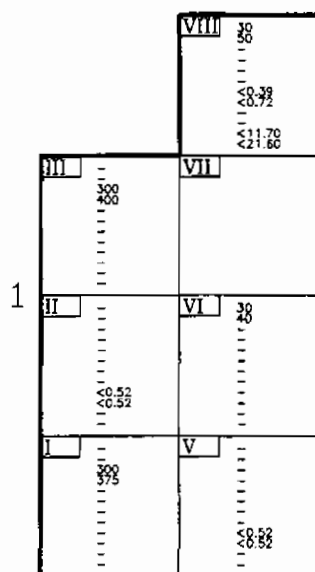
A

FLOOR

CNSY G-RAM FINAL REPORT

Section 9. Building 57

e. Localized Grid Map



A

FLOOR

Note:
Entries 5 and 6 are not required for Class "A" Localized
Grid Maps. See the Discussion paragraph.

Data Legend:

- | | |
|-----------------------------------|--|
| 1 - IM-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD (HV-1 PHA) [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - IM-253/PD (HV-1 PHA) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90 |
| 5 - IM-253/PD (HV-2 GROSS) [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - IM-253/PD (HV-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

CNSY G-RAM FINAL REPORT

Section 9. Building 57

f. Photographs



Building 57, viewing east.